AVIATION

JANUARY 22, 1923 Issued Weekly PRICE 10 CENTS

The deBothezat helicopter lifting off at McCook Field, Dayton, Ohio

VOLUME XIV

Number 4

SPECIAL FEATURES

ARMY ASKS BIDS FOR TRANSPORT AIRPLANES

COMPLETE LIST OF AMERICAN AIRPORTS—PART II

SUCCESSFUL TRIALS OF THE DE BOTHEZAT HELICOPTER

THE GARDNER, MOFFAT CO., INC.
HIGHLAND, N. Y.
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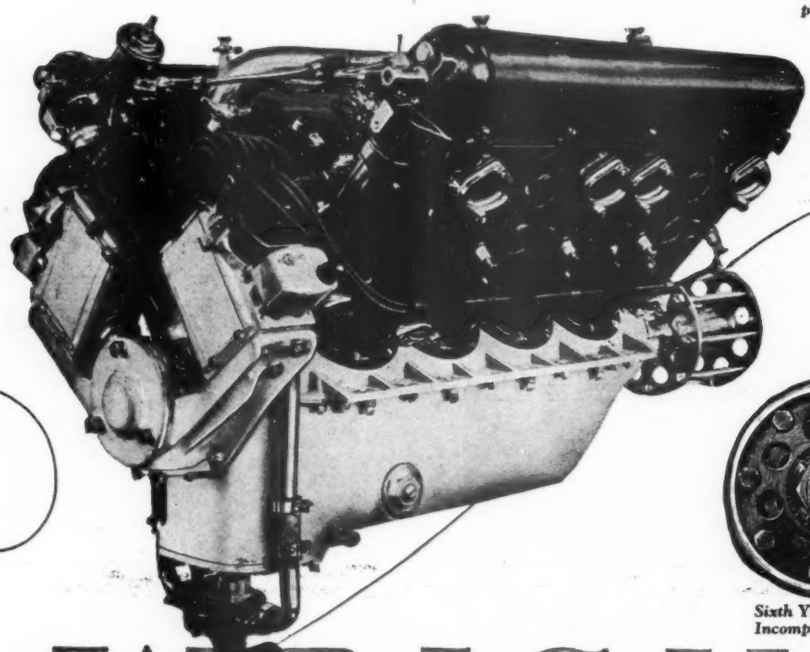

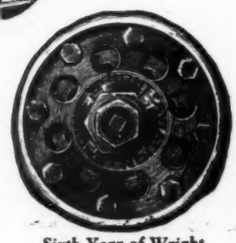

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WRIGHT

JANUARY 22, 1923

AVIATION

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Vol. XIV JANUARY 22, 1923 No. 4

The Civil Aeronautics Act of 1923

THOSE who, with growing anxiety, have been watching the apathy of Congress with respect to federal air legislation, will find considerable comfort in the bill known as the Civil Aeronautics Act of 1923 which Representative Winslow introduced in the House. This legislative measure may truly be considered as the bill of rights of civil aeronautics. If it is enacted by Congress, the foundation will have been laid for that uniform air law extending over the entire American territory which the best supporters of aeronautics have advocated for so long.

At first glance it may seem that the bill attempts too much by providing for so many detail regulations. However, with a full knowledge of the many and diverse interests involved, it becomes apparent that anything less would have left uncovered parts of existing law which, while applicable to aircraft, are not specific in their application to aeronautical problems.

The approval of the first draft of the bill was secured from as many directions as possible. Interested government departments, the aircraft industry, aeronautical organizations and legal advisers were consulted, and their recommendations found expression in the bill. As a result the bill will have the support of practically everyone seriously concerned with aeronautics.

That there will occur wide discussion of certain points of the measure is to be expected. Some of the definitions, such as "master," or "air navigation facility," will seem strange at first, but they will soon become a part of our everyday flying vocabulary. The powers of the Bureau of Civil Aeronautics seem clearly defined, and fortunately give wide discretionary powers to the Secretary of Commerce and the Commissioner of Civil Aeronautics for a liberal interpretation of the law. The regulations to which aircraft, air stations and airmen will be subject under the law are as definite as they are necessary. That these provisions substantially follow those prescribed in the International Air Convention will be highly gratifying to those who believe that air navigation, owing to its essentially international scope, will eventually be regulated all over the world by a uniform law code.

The penalties attached to the unlawful navigation of aircraft, and violations of customs, health and immigration laws may seem unduly severe. Yet they only make aircraft conform to the regulations affecting other public carriers. Furthermore, the Secretary of Commerce is, in many cases, given the opportunity to temper the letter of the law according to his best judgment.

The legal interpretation of the sovereignty of the air is the result of the best advice obtainable. Many years will probably elapse before the law of the air reaches a point of stability comparable to that of maritime law, for instance. However, the basis is laid, and well laid.

There is one very practical way in which those interested in American aeronautics can assist the passage of this bill, and that is by taking the matter up with their Senators and Representatives in Congress. Unless the latter are clearly shown that this bill is urgently needed, there is unlikely to be any prompt action, and it will be 1925 before civil aeronautics can settle down to a basis of regulated operation in the knowledge of its legality.

Our Foreign Contemporaries

THE French and English aeronautical press are to be congratulated on the issues they have published at the time of the Paris Aero Show. *L'Aéronautique* for December has all the appearance of one of the special editions of our automobile press, containing as it does two hundred pages of text and advertising. Not only is the Show reviewed in a most complete manner but this is supplemented by an advertising section that cannot but impress the most casual reader with the wide scope and stability of the French aeronautic industry and the allied accessory trades.

The Aeroplane publishes a Special Foreign Issue in which the British Aircraft Industry lays before the world its achievements in English, French and Spanish. C. G. Grey, its editor, whose interesting comment on all phases of aeronautics is enjoyed as much in the United States as in Great Britain, makes a frank statement of the publishing difficulties of the English aeronautical press. He says:

> The French are desperately in earnest and really keen on aviation and the development of air power, as is shown by the colossal circulations of those excellent publications, *L'Air*, *L'Aeronautique*, *Les Ailes* and *L'Aero-Sports*, all flourishing as the result of official and popular interest, while we in this rich country, leading as we do in the science and practice of aircraft design do not even provide a living for our two emaciated little aviation papers.
>
> One was told in Paris on excellent authority that the printing bill alone of the special aero-show issue of *L'Air* was close on £3,000 at the current rate of exchange, and that is without any office or overhead charges. Such a sum of money would pay the advertisement account of the whole of the British Aircraft Industry, so far as its trade papers are concerned at any rate, for six months or more.
>
> Some day perhaps the British Aircraft Industry will awake to the fact that just as a man is judged by the company he keeps so an Industry is judged by the trade papers it keeps.

Here in the United States, the home of advertising genius, only a few of the aircraft constructors and practically none of the accessory manufacturers have learned the advantages of a trade press. Perhaps the example set by foreign constructors whose selling problems are identical with ours may cause a wider appreciation of the fundamental necessity to any industry of strongly supported business publications.

Design Competition for Transport Airplane

Air Service Asks for Bids on Liberty-Engined Eight-Passenger Carrier of 105 m.p.h. Speed

The Engineering Division, Air Service, McCook Field, has issued a circular (No. 1556) covering the Design and Construction of ten Transport Airplanes on which bids are invited from manufacturers. The salient points of this type of airplane, which is described in detail in the specifications which follow, are that it should carry a total useful load of 2520 lb. with a 400 hp. Liberty engine at a maximum ground speed of 105 m.p.h. and have a service ceiling of 10,000 ft. The only notable restriction as to the type of construction is that the fuselage shall be of welded steel tubing.

The circular reads, with some minor omissions which concern the details of working drawings, part list and bill of material, and the specification and drawing numbers of instruments, as follows. (Communications regarding the full specification should be addressed to the Engineering Division, Air Service, McCook Field, Dayton, Ohio.)

General Conditions of the Contract

1. Designs of Air Transports accompanied by bids for constructing and delivering ten such airplanes and spare parts, all sealed and in triplicate, will be received by the Office of the Contracting Officer, McCook Field, Dayton, Ohio, until 2.00 p. m. Feb. 15, 1923, and then opened in the presence of such competitors as attend. Each competitor shall include in his bid a list of spare parts which he recommends to keep ten airplanes of his design in service for one year and shall show after each item of spare part its price. Bids shall state definitely when deliveries of the airplanes and spare parts will be made.

2. In awarding the contract, the Government will consider merit of design, price, delivery dates, ease of production, estimated cost of maintenance and all other pertinent elements. As the Government desires to have these airplanes in service at the earliest possible date, times of deliveries will largely influence the award.

3. The information listed in paragraph 3, section 1, pages 7 to 9 of the 1922 issue of the Handbook of Instructions for Airplane Designers and in addition data showing clearly methods of disassembly and overall dimensions of units, suitably crated, boxed or packed for domestic shipment, must accompany each design, in triplicate. All the rejected designs and all information submitted therewith will, upon application, be returned after such rejection. Specification No. 1556, a part hereof, and the said 1922 issue of the Handbook of Instructions for Airplane Designers will govern the design and construction of the airplanes. The only restriction as to type of construction, except as provided in the specifications, is that *the fuselage shall be of welded steel tubing.*

4. While it is desired that each competitor shall furnish all of the information called for above and shall otherwise fully comply with all of the terms of this circular and of the specifications applicable, the Chief of Air Service, in selecting the design deemed the most satisfactory, reserves the right, if in his opinion it is in the interest of the Government to do so, to waive slight failures of any competitor to comply strictly with all of the requirements of this circular and of the specification.

5. Designs will not be considered when submitted by a designer who, in the opinion of the Chief of Air Service, has insufficient facilities or insufficient personnel to properly perform the contract.

6. The Government reserves the right to purchase the irrevocable but non-exclusive and unrestricted rights to the one design which, in the opinion of the Chief of Air Service, is the most satisfactory for the purpose, together with the right to use all the information and data furnished with the design, for $2,500.00 plus $100.00 royalty for each airplane produced in the future by or for the Government, in excess of the ten airplanes to be contracted for hereunder; provided, however, that the $2,500.00 will not be paid a competitor for his design if he is awarded the construction contract hereunder; and provided further that such design is not substantially a copy of an existing foreign or domestic airplane. If such design is adjudged to be substantially a copy of an existing foreign or domestic airplane, only $1,000.00 and no royalty will be paid for the rights to such design by the Government. The Government will similarly purchase with the consent of the competitor, any other design, which in the opinion of the Chief of Air Service, has sufficient merit, for the sum of $500.00 plus $100.00 royalty for each airplane produced by or for the Government in accordance with such design. When, if ever, the sum of $20,000.00 is paid as royalties, the Government shall thereafter have the right to reproduce the airplanes of any design without further royalties or claims against it by the original designer.

7. The contract will follow in general the form now in use by the Air Service and will include, inter alia, the following provisions:

(a) That certain data and drawings will be prepared by the contractor and checked by the Air Service before commencing the construction of the first airplane.

(b) That before commencing the construction of the first airplane, the contractor will be required to build a mockup of the Transport. The requirements for this mockup are those set forth in the Handbook of Instructions for Airplane Designers, and such mockup will be subject to inspection and approval by the Air Service. If actual engines, instruments and accessories to be furnished by the Government are not available, dummies thereof, correct in dimensions, will be furnished by the Government free of cost, f.o.b. Dayton, Ohio.

(c) That the assembly of the last nine airplanes be held back by the contractor not to exceed sixty days after the delivery of the first, to permit the incorporation of any changes which appear necessary or advisable from the inspection or test of the latter. Changes made by the Government shall be paid for in an amount to be agreed upon if such changes materially affect the basic design or if any changes are ordered to be made at any time or times other than prior to the final approval of the mockup or during the period during which the contractor is to hold back assembly. No other changes will be paid for.

(d) That the contractor will furnish a complete set of Vandykes of working drawings, parts lists and bills of material (described in this circular) coincident with the delivery of the last airplane under this contract.

(e) That the Government will furnish, without cost to the contractor, except for transportation, the engines, instruments and standard accessories mentioned in the specification as being furnished by the Government. The cost of all transportation must be paid by the contractor.

(f) That partial payments will be made to the contractor as the work progresses.

(g) That the contract must be accompanied by an approved surety bond in triplicate for at least 20 per cent of the amount of the contract.

(h) That the first article contracted for must be delivered in good condition by the contractor f.o.b. the then Headquarters of the Engineering Division, Air Service, where it will be tested by said Division and accepted or rejected according to the terms of the contract. (In this connection, see Par. 8 of this Circular). The specification prescribes the tests. The contract will allow the contractor an agreed time within which to modify and rectify any rejected

article with a view to making same acceptable to the Government. The remaining airplanes, unless otherwise prescribed in the contract, will be set up without expense to the Government for flight delivery at the nearest suitable landing field. Acceptance will be made at said landing field after test flights of not to exceed a total of four hours duration are made by the Government and all corrections found to be necessary to make the airplanes satisfactory, have been made by the contractor. The test flight or flights will be made at the expense of the contractor but at the risk of the Government. The Government will furnish the pilot.

(j) Spare parts will be, unless otherwise prescribed in the contract, suitably crated for domestic shipment and delivered f.o.b. cars contractor's plant. Deliveries of all spare parts will be made prior to or coincident with the delivery of the last airplane.

(i) Should the contract provide for any other form or forms of delivery, additional remuneration to be mutually agreed upon, will be provided for.

(k) That a deduction of liquidated damages for failure to meet delivery dates will be provided for.

8. With a view of possibly avoiding static tests of an entire airplane, the contract may make provision for the static testing of typical structural members or complete units by the contractor under the supervision of the Government during the course of construction of the airplane, in which event consideration therefor will be agreed upon with the contractor.

With a view toward hastening deliveries, the contract may provide, if it is to the best interest of the Government to do so, and if the necessary facilities are available, to flight test the first airplane at a suitable landing field in the vicinity of the contractor's plant. This test will be at the expense of the contractor, but at the risk of the Governement. The Government will furnish the pilot.

9. The Government reserves the right to reject any or all bids.

Section I—General Requirements

1. The general requirements of the Engineering Division governing the construction of airplanes are set forth in the "Handbook of Instructions for Airplane Designers" and Specifications issued by this Division and must be complied with unless specifically excepted by this specification.

2. The Government will furnish the engine, with starter and engine driven generator, and the equipment as set forth in Section IV of this specification.

3. Following is an approximate summary of the total load which the airplane shall be designed to carry.

(a) Crew—two (180 lb. each)	360 lb.
Passengers—six (180 lb. each) or frt.	1080 "
(b) Fuel	750 "
(c) Oil	100 "
(d) Equipment:	
Instruments	15 "
Electrical	75 "
Miscellaneous (including an allowance for parachutes.)	140 "
Total	2520 lb.

4. The following performances with full load are desired: a sacrifice in speed is preferred to a sacrifice in climb.

(a) 105 m.p.h. at ground level.

(b) Service ceiling 10,000 ft.

(c) Distance to take off and run on landing should be as short as possible.

5. It is of primary importance that the design shall be such as will insure ease of production, easy and rapid installation of power plant and equipment and ease of general maintenance.

6. The airworthiness, handiness of control and general flying qualities of the airplane must be satisfactory to the Air Service. The degree of stability shall be such that the airplane will require a minimum amount of attention on the part of the pilot.

7. The seats for the passengers shall be easily removable to permit carrying freight. The dimensions and arrangement of the space for passengers should permit their moving around in comfort, and allow a normal man to stand erect. If satisfactory provision for the passengers is made there should be sufficient space for freight, but with seats removed it shall be possible to carry 4-bladed propellers of about 400 hp., 2-bladed propellers of about 800 hp., and concentrated loads of approximately the weight and dimensions of the Liberty engine. Baggage space sufficient to carry approximately 50 lb. per person shall be provided.

8. It is intended that the crew of two shall both be pilots. Dual control shall be provided, and it shall be possible for pilots to interchange seats readily, and each shall have access to the passenger cabin.

9. The safety of the crew and passengers in case of a crash should receive careful consideration and all reasonable measures should be taken to prevent injury from tanks, equipment and other installations. The placing of structural members in locations which might make egress difficult in case of a crash should be avoided. Adequate means shall be provided for egress of crew and passengers, both under normal conditions and in emergencies, by means of doors, steps, ladders, etc.

10. All controls and equipment must be conveniently located so that there will be no difficulty or confusion in their operation.

11. Toilet facilities shall be provided.

12. Gasoline and cooling systems should be as simple and reliable as possible.

13. Factors of safety of various structural parts of this airplane shall be as specified for Type XII in the Handbook of Instructions.

Section II—Material and Workmanship

1. All materials entering into the construction of this airplane shall be in accordance with Air Service specifications.

2. Fabric if used for fuselage and wing covering shall be at least equal in quality to Air Service grade A.

3. The workmanship shall be of the best grade, commensurate with the best commercial standard. Processes and methods covered by Air Service specifications shall be followed.

Section III—Power Plant

1. The power plant shall be one Liberty-12 engine with engine driven generator and rear end starter.

2. The gasoline tanks shall be of the type termed "crash proof."

Section IV—Armament

1. No armament will be required. Other things being equal, a design which will permit the installation of a fixed 30 caliber gun forward, a flexible mount for two Lewis guns in the rear, and carry approximately 1000 lb. of bombs, is considered preferable to one which will not permit such installations. These installations need not be in strict accordance with the Handbook, but should obviously be operative.

Section V—Equipment (Instruments & Accessories)

1. The location of instruments shall be such that they will function properly under all service conditions, to which this type of airplane is subjected. Each item of equipment shall be marked to show its use, shall be accessible and readily installed and removed.

2. The instruments which shall be installed on this airplane by the contractor will be furnished by the Government free of charge. They include the following:

Airspeed indicator, venturi pitot head, altimeter, airplane compass, aircraft clock, gasoline pressure gage, oil pressure gage, thermometer, tachometer, tachometer shaft, gasoline level gage, flight indicator (one each).

3. The following electrical equipment will be furnished by the Government, free of charge and installed by the contractor.

Engine driven generator, Type 1-L (mounted on engine), Bijur rear end starter (mounted on engine), Solenoid switch, starter push button, generator control box, ignition switch,

storage battery type AS-2, battery terminal, positive, battery terminal, negative, signal light sending unit, signal light assembly, navigation light, right, navigation light, left, tail light, navigation light switch, landing lights (2), landing lamps (2), landing light switches (2), wing connector panels (2), connector plates (2), instrument lamps (4), compass light switch, voltmeter, hand flash trouble lights (2). One each unless otherwise specified.

4. The following miscellaneous equipment shall be furnished and installed by the contractor, excepting items marked by an asterisk, which will be furnished by the Government, free of charge, for installation.

1 Life preserver cushion, for each occupant of the airplane.
*2 Pilots belts.
*2 Fire extinguishers and brackets.
Propeller, cockpit and engine covers.
1 Belt for each passenger (design to be approved by the Eng. Div.).
*4 Mark I Flare releases.
4 Flare release handles.

5. Provision shall be made in the seating arrangement so that a seat type parachute may be worn by each occupant of the airplane.

6. *Instruction Plates.* Small stamped aluminum plates shall be placed near all instruments or controls. These plates will name the instrument or control and, if necessary, give its function and methods of operation. These plates shall be furnished by the contractor.

Section VI—Inspection

1. Enginering Division representatives, appointed to inspect the product of the contractor, shall be afforded all reasonable means to determine compliance with this and other specifications mentioned herein and with the Handbook of Instructions. The presence of Government inspectors shall not relieve the contractor of the responsibility for proper workmanship and material. The contractor shall inform the inspectors when materials or parts are ready for inspection.

2. The contractor shall not employ any material which has been rejected, nor shall he resubmit such material for acceptance without giving the inspectors full particulars concerning previous rejection.

3. Government inspectors may reject unsatisfactory material at any time.

4. Tests shall be made at the factory to determine that installations are properly made and in working order.

5. It is the general practice of this Division to subject the first airplane delivered on an order, to static load tests and the second and later airplanes, to performance tests. These tests, when required, shall be made prior to acceptance at McCook Field, Dayton, Ohio, at the expense of the Government.

New York-Newport Seaplane Service

New Yorkers who spend their vacations at Newport have oversubscribed funds for establishing a seaplane service for week-end trips next summer, according to the Boston *Evening Transcript.* Vincent Astor and T. Suffern Tailer are in charge of the project. Planes will leave New York Fridays and Saturdays and return Sundays and Mondays. The time of the trip one way will be an hour and a quarter. By train the trip takes six hours. Newport is 225 miles from New York by train. Many of the underwriters, who include Mr. Astor and Mr. Tailer, are known internationally in business and sport. The underwriters gave Messrs. Astor and Tailer full authority to organize the air route upon the basis of highest efficiency and greatest safety.

The committee of two accordingly asked for propositions from various companies operating airplanes for passenger service and received two possible bids upon the conditions laid down. One of the bids was from a company which proposed to operate regularly a large ten to twelve-passenger seaplane between New York and Newport with the guarantee that it would cover the distance between the city and resort in two and a half hours. The other bid was from a company which proposed to put in the air a fleet of seaplanes, which would cover the distance in an hour and a quarter.

One or more airplanes will leave New York from within city limits at 2 p. m. Friday, reaching Newport by 3.15, in time for the passengers to be on the golf links or tennis courts by midafternoon.

A second airplane will leave New York at 5 p. m. Friday, reaching Newport at 6.15, in time for the passengers to dress for dinner. Still another machine will leave New York at noon Saturday, landing the passengers in the inner harbor at Newport at 1.15, in plenty of time for the events of a typical Newport Saturday afternoon.

Returning, the timetable calls for an airplane to leave Newport Sunday evening at 6 p. m. Others will leave the resort at 8.30 a. m. Monday and still another at 6 p. m. Monday.

The underwriters will have first opportunity to buy tickets for the week-end trips by air route when the sale is opened early in May.

International Air Congress, London

A strong executive committee under the Chairmanship of Maj. Gen. Sir F. H. Sykes, has taken in hand the organization of the International Air Congress which is to be held in London from June 25 to 30 next. National committees have been formed in several countries to prepare lists of names for membership of the Congress, and in other countries lists are being obtained through the Aero Clubs or other representative bodies.

Membership is limited to those countries which are members of the *Fédération Aéronautique Internationale* or signatories of the International Air Convention. The subscription is to be £1 (or its equivalent in foreign currencies) for a Member, and 10s. 0d. for an Associate Member who must be a member of the family of a Member.

The papers to be read are divided into four groups, which will hold sessions simultaneously, and will cover every aspect of the subject from fundamental scientific problems to such matters as passport regulations and the organization of an aerial transport company.

The Air Ministry has arranged to hold the Royal Air Force Pageant on June 30, the final day of the Congress.

C. V. Allen having resigned, Lt. Col. W. Lockwood Marsh, the Technical Secretary, has been appointed General Secretary of the Congress, the official address of which is c/o The Royal Aeronautical Society, 7 Albermarle Street, London, W.1. England.

N.A.C.A. Executive Session

The National Advisory Committee for Aeronauties, met in executive session at the Navy Building on Jan. 10. All members were present except Lt. Cdr. Hunsaker, U. S. N. the new member, who is on an inspection trip for the Bureau of Naval Aeronauties.

It was voted by the committee that Dr. S. W. Stratton would continue to serve as the representative of the Bureau of Standards until his successor had been chosen. Secretary Hoover, it appears, is rather discouraged in his efforts to secure a new head for the Bureau of Standards, most available physicists, he says have been retained by big manufacturing interests since the war at salaries in excess of the $6,000 he is permitted to pay the Director of the Bureau of Standards.

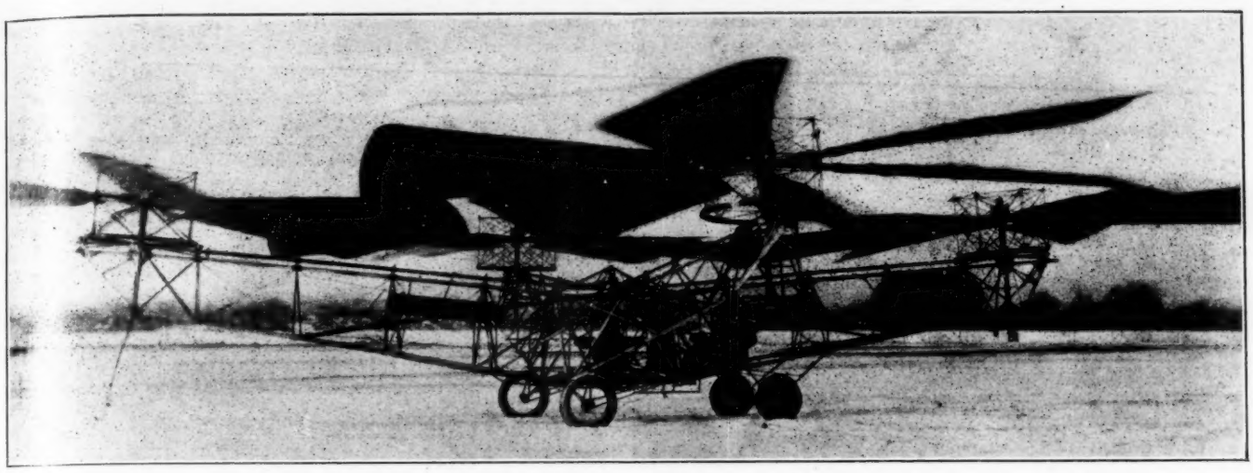
During the session, Maj. Gen. Patrick, Chief of Air Service, explained to the members the recent test of the de Bothezat helicopter at Mc Cook Field.

Announcement was made that the Committee had been invited to send a representative to International Air Congress in London, in June 1923, but the matter was not decided definitely.

E. T. Jones, an Army Engineer stationed at Mc Cook Field, was elected to fill the vacancy on the power plant subcommittee made by the resignation of Capt. G. E. A. Hallett, who has since joined the General Motors Co.

Successful Helicopter Trials at McCook Field

The de Bothezat Helicopter Lifts 3600 Lb. with 170 Hp.



Official Photo, U. S. Army Air Service

General view of the de Bothezat helicopter which is fitted with a 170 hp. Le Rhône engine

Aeronautical engineers for a long time have been studying the problem of vertical flight, endeavoring to design and build an aircraft which, under its own power, without the aid of any lifting agency such as hydrogen gas or helium enclosed in a balloon, could rise vertically and move at the will of the operator through the air and then descend straight to the earth. Such an aircraft is called a helicopter, this name being derived from two Greek words and means a "winged screw".

The Air Service now announces that at last it has developed such a machine, and that the first successful flight was made at the headquarters of the Engineering Division at Mc Cook Field, Dayton, Ohio, on Dec. 18, 1922. The duration of this flight was one minute and forty-two seconds, the altitude reached about six feet. The helicopter rose straight from the ground and then was maneuvered at the will of the operator, and then descended, landing safely and easily. In flight it was steady and the landing was easily accomplished. The helicopter demonstrated a high degree of inherent stability. This flight was witnessed by many Army officials and employees at Mc Cook Field and by a number of others. While the duration of the flight was a little less than two minutes, it will be remembered that the first airplane flight in a heavier-than-air machine made by the Wright brothers, Dec. 17, 1903, lasted only fifty-nine seconds.

This helicoptor, built by the Air Service, was designed by Dr. G. de Bothezat, the eminent aeronautical engineer, and built under his personal supervision. Work was started in July, 1921, but it has not been given publicity until actual tests have demonstrated the successful performance of the machine.

The de Bothezat Helicopter has a total weight of 3600 lb., pilot and fuel included. There are four lifting screws of the de Bothezat plane-radial type actuated by a Le Rhône motor of 170 hp. The system of gearing employed is entirely novel, specially designed by Dr. de Bothezat for this use, and the working of this system has been exceptionally satisfactory.

The de Bothezat Helicopter was built full size, without preliminary models or tests of any kind, all of the details of the construction being based upon computations made by Dr. de Bothezat and in accordance with his general theory of blade screws, written for and published by the National Advisory Committee for Aeronautics, and upon his theory of helicopter stability. The remarkable results obtained, the behavior of this machine in the air, demonstrate in a notable way the importance of making adequate use of scientific methods, and how time and money can be saved thereby. The construction of the helicopter consumed only eighteen months, and this time includes the work of designing and building and all adjustments and tests. Certain improvements and modifications may be found advisable. At the Engineering Division of the Air Service this first machine will be given further and exhaustive tests, which it is expected will point the way to further developments.

During this first successful flight of the helicopter it was piloted by Maj. T. H. Bane, who had been in charge of the Engineering Division while the machine was being designed and built.

Air Transport in the Netherlands

During the past summer the Royal Dutch Air Navigation Co. (K.L.M. Air Line) on the Amsterdam-London and Amsterdam-Brussels routes carried 995 passengers, 803,251 letters, 1,672,555 parcels, and 62,889 kilograms of cargo. In addition, 2,582 passengers were carried on short pleasure trips in Holland.

The service to London is proving a great boom to Dutch flower growers and to the British newspapers. In June and July 1922, 3,837 kilograms of fresh flowers were carried to London and 10,016 kilograms of English newspapers to Holland. The total distance flown by the company's machines is now over 1,200,000 kilometers, and not a sing'e accident has occurred.

The fares have now been reduced considerably and are only slightly higher than those of the fast steamship services. The fleet of the company consists of Dutch-built Fokker machines, which have proved reliable and stable.

Schneider Cup Race, 1923

The Racing Committee of the Royal Aero Club of Great Britain, which is in charge of the organization of this years Schneider Maritime Aviation Cup race, has asked the International Aeronautic Federation to have the seaworthiness test take place six hours before the flotation test. The seaworthiness test consists in taxiing on the water a distance of one half mile in both directions. It is also suggested that in the speed tests all contestants start at the same time.

Airports in the United States and Possessions

Compiled by the Aeronautical Chamber of Commerce of America, Inc., 501 Fifth Avenue, New York, N. Y., with the assistance of the Airways Section, U. S. Air Service; Bureau of Aeronautics, Navy Department; Air Mail Division, Post Office Department; and the National Advisory Committee for Aeronautics.

(Continued from last issue)

NOTE:—The Aeronautical Chamber of Commerce has endeavored to obtain accuracy in this list, but due to the fact that much of the information is voluntary, responsibility can not be taken for errors in classification. Where detailed data is desired, the Aeronautical Chamber of Commerce invites correspondence.

The names of Flying Fields are printed in *italics*.

The letters following the city or town indicate the kind of airport, as follows:

B .....Balloon.
C .....Commercial.
G .....Government.
GA .....Government—Army.
GN .....Government—Navy.
GPO .....Government—Post Office.
GFP .....Government—Forest Patrol.
M .....Municipal.
Mr .....Marine.
NG .....National Guard
S .....Seaplane.
UF .....Unimproved Facilities

Minnesota

Amboy	UF	Duluth	S-UF	Milan	UF	Sleepy Eye	C
Appleton	UF	*Superior Country Club*		Minneapolis (see St. Paul)		Valley	UF
Breckenridge	UF	Fairmont	UF	Minnesota City	UF	Waconia	UF
Cannon Junction	UF	Golden	UF	Montevideo	UF	Wayzata	UF
Clara City	UF	Graceville	UF	New Germany	UF	Wheaton	UF
Crookston	M	Hastings	UF	Parker	UF	White Bear Lake	C
Crow River	UF	Hibbing		St. Paul	2-C; M-G	White Rock	UF
Dakota	UF	Lake City	UF	*Twin City Field*		Willmar	UF
Dresbach	UF	Maynard	UF	*Curtiss Airport*		Winona	M

Mississippi

Aberdeen	UF	Clarksdale	UF	Holly Springs	UF	Natchez	S
Artesia	UF	Como	UF	Jackson	UF	Newton	UF
Belzoni	UF	Corinth	UF	Kosciusko	UF	North Carrollton	UF
Biloxi	UF	Greenville	S-UF	Laurel	M	Senatobia	UF
Canton	UF	Grenada	UF	Louisville	UF	Tupelo	UF
Charleston	UF	Hattiesburg	UF	Meridan	UF	Vicksburg	S-UF
						West Point	GA-UF
						Payne Field	

Missouri

Atlanta	UF	Excelsior Springs	UF	La Platte	UF	Poplar Bluffs	UF
Bogard	UF	Fayette	UF	Leasburg	UF	Queen City	UF
Booneville	UF	Festus	UF	Lebanon	UF	Richland	UF
Bowling Green	UF	Flat River	UF	Lexington	UF	Rolla	UF
Bridgeton	UF	*Columbia Park Field*		Liberty	UF	St. Charles	UF
Brookfield	UF	Fulton	C	Macon	UF	St. Francois	UF
Bucklin	UF	Gallatin	UF	Malden	UF	St. Genevieve	UF
California	UF	Hamilton	UF	Marceline	UF	St. Joseph	S-UF
Cape Girardeau	S-UF	Hannibal	UF	Marshall	UF	St. Louis	C-S-UF
Carrollton	UF	Higginsville	UF	Mexico	UF	*Forest Park*	
Carthage	UF	Independence	UF	Moberly	UF	Sedalia	UF
Caruthersville	S-UF	Jefferson City	UF	Milan	UF	Senneca	UF
Centralia	UF	Jonesburg	UF	Montgomery	UF	Slater	UF
Chaffee	UF	Joplin	UF	Monett	UF	Springfield	M-C
Chillicothe	UF	Kansas City	C	Monroe City	UF	*Snavely Flying Field*	
Clinton	UF	Keota	UF	Nevada	UF	Sullivan	UF
Cuba	UF	King City	UF	New Florence	UF	Trenton	UF
Dexter	UF	Kirksville	UF	New London	UF	Washington	UF
Ester	UF	Lamar	UF	Paris	UF	Webb City	UF
						Willow Spring	UF
						Windsor	C

Montana

Arlee	UF	Elliston	UF	Helena	UF	Mission	UF
Bigtimber		Forsyth	UF	*Fort William*		Missoula	M
Billings	UF	Fort Benton	UF	*Henry Harrison*		Park City	UF
Boulder	UF	Garrison	UF	Heron	UF	Perma	UF
Bozeman	M	Glasgow	M	Kalispell	UF	Plains	UF
Bridger	UF	*Kerr Field*		Laurel	UF	Plentywood	UF
Butte	UF	Glendive	UF	Livingston	M	Reid Point	UF
Chinook	UF	Great Falls	UF	Malta	UF	Shelby	GUF
Choteau	M	Hardin	UF	Manhattan	UF	*The Last Chance*	
Columbus	UF	Harve	UF	Miles City	C	Sidney	UF
Dixon	UF			*Fort Keogh*		Terry	UF
						Thompson Falls	UF
						Townsend	UF
						Winston	UF

Nebraska

Alliance	M	Elkhorn	UF	Litchfield	UF	Osceola	UF
Beaver City	UF	Fanburg	UF	Lodgepole	UF	Paxton	UF
Benkelman	UF	Fall City	UF	Lodi	UF	Potter	UF
Brainard	UF	Farwell	UF	Loup City	UF	Rising City	UF
Brule	UF	Fort Crook	GA	Mason City	UF	Saint Paul	UF
Bushnell	UF	Georgetown	UF	Mead	UF	Shelby	UF
Callaway	UF	Grand Island	C	Millerton	UF	Sidney	UF
Central City	UF	Hastings		Nebraska City	UF	Superior	UF
Chadron	UF	Hershey	UF	Norfolk	UF	Sutherland	UF
Chappell	UF	Holdrege	UF	North Platte	GPO	Valentine	M
Clarks	UF	Imperial	UF	Oconto	UF	Wahoo	UF
Colon	UF	Kearney	UF	Ogallala	C	Waterloo	UF
David City	UF	Lexington	UF	Omaha	M-GPO	Wymore	UF
Dunning	UF	Lincoln	C	*Ak Sar Ben Field*		York	UF
				Fort Omaha		Yutan	UF

Nevada

Arthur	UF	Elko	GPO	Las Vegas	UF	Shafter	UF
Battle Mountain	UF	*White Sage Field*		Lovelocks	UF	Sparks	UF
Beowawe	UF	Ely	UF	Mina	C	Tonopah	UF
Caliente	UF	Fallon	UF	Montello	UF	Winnemucca	M
Carson City	UF	Harney	UF	Parran	UF	Yerington	M
Derby	UF	Hazen	UF	Reno	M-GPO		
Dry Lake	UF	Humbolt Lake	UF	Roach	UF		

New Hampshire

Concord	C	Hampton Beach	C	Lancaster	M	Portsmouth	UF
Gorham	UF	Hanover	UF	Manchester	UF		

New Jersey

Asbury Park	S-UF	Green Village	UF	Madison	UF	Princeton	UF
Atlantic City	2-C	Hackettstown	UF	Maplewood	UF	Ralston	
Aeromarine Terminal		Harrison	UF	Meadow Brook	UF	Ridgewood	
Atlantic City Airport		Hasbrouck Heights	C	Medford	UF	Rockaway	S
Curtiss Airport		*Wittemann Lewis Field*		Mendham	UF	Salem	UF
Belvidere	UF	Hightstown	UF	Millville	UF	Sandy Hook	GUF
Bergenfield	UF	Kenvil	UF	Morristown	UF	*Fort Hancock*	
Boonton	UF	Keyport	C-S-UF	Newark	GPO-C	Schooley's Mt.	UF
Bridgeton	UF	*Aeromarine Port*		Newport	UF	Seagirt	UF
Brookside		Lakehurst	G	Newton	UF	Sewell	UF
Cape May	UF-S-G	*Naval Airships*		Oxford	UF	Short Hills	
Dover	UF	Little Falls	UF	Perth Amboy	UF	Spring Lake	UF
Elizabeth	UF	Little Silver	G	Pine Valley	C	Stephensburg	UF
Florhan Park	UF	*Camp Alfred Vail*		*Curtiss Flying Field*		Tenafly	UF
Franklin Furnace	UF	Long Branch	UFS	Plainfield	C	Washington	UF
Freehold	UF	*Pleasure Bay*		Port Murray	UF	Wrightstown	GA
Gloucester	UF	Long Valley	UF	Pompton Lakes	UF	*Camp Dix*	

New Mexico

Albuquerque	C	Dawson	M	Las Vegas	UF	Taiban	M
Almagordo	M	Deming	GA	Lordsburg	M	*Speight Field*	
Carlsbad	UF	*Camp Cody*		Onava	UF	Texico	C
Cerillos	M	Des Moines	UF	Optimo	UF	*Hamlin Field*	
Chepelle	UF	Farmington	UF	Roswell	UF	Tucumoari	UF
Clayton		Gallup	UF	Santa Fe	C	Wagon Mound	UF
Clovis	UF	Garcia Ranch	UF	Shoemaker	UF	Willard	M
Clyn Smith Field		P. O. Barney		Silver City		*Torres Field*	
Columbus	GA	Hachita	UF				

New York

Albany	MS	Deposit	UF	Monticello	UF	Rochester	M
Quentin Roosevelt Field		Geneseo	UF	Newburgh	S	*Britton Field*	
Alexandria Bay	S	Glens Falls	M	New Dorp, S. I.	GA	Rome	UF
Auburn	CS	Goshen	UF	*Miller Field*		Rye	UF
Au Sable Forks	UF	Hammondsport	C	New Rochelle	S	Saranac Lake	UF
Avon	UF	*Airship Mfg. Co.*		New York City	MS	Saratoga Springs	UF
Bainbridge	UF	Horseshoe	UF	*Aeromarine Port,*		*MacGregor Field*	
Binghamton	C	Ithaca	M-C	*Hudson River*		Schenectady	M
Batavia	UF	*Thomas-Morse Field*		*Loening Terminal,*		Schoharie	UF
Birdsell	UF	Jamestown	UF	*East River*		Sidney	C
Brooklyn	MS	Jay	UF	Niagara Falls	M	Silver Creek	UF
Buffalo	C-S	Keeseville	UF	North Rose	UF	Sylvan Beach	UF
Curtiss Airplane Co.		Lake George	S	Ogdensburg	S-C-UF	Syracuse	UF
Morris Field		Lake Placid	S	Oneida	M	*Bethka Field*	
Elias Port		Little Falls	UF	Orchard	UF	Tarrytown	UF
Canton	UF	*Smith Landing Field*		Oswego	UF	Tioga Center	UF
Carthage	UF	Lockport	UF	Piercefield	UF	Troy	UF
Chatham	UF	*Curtiss Field*		Plattsburg	S-GA	Tupper Lake	
Corning	UF	Lowville	UF	Port Henry	UF	Utica	M
Cranberry Lake	UF	Malone	UF	Port Jervis	M	*Glen D. Wicks Field*	
Waterloo	UF	Wellsville	UF	Poughkeepsie	UF	Worcester	UF
Thomas Field		Middletown	UF	Pulaski	UF		
Cornwall-on-Hudson	UF	Millerton	UF	Red House	UF		
				Westfield	UF		

LONG ISLAND

Amityville	CS	East Hampton	UF	Greenport	S	Rockaway	GN
Burnelli Field		Farmingdale	C	Hempstead	G-GPO	Sayville	UF
Babylon	UF	*Sperry Field*		*Roosevelt Field*		Southampton	UF
Baldwin	C	Flushing	UFS	Mineola	C-GA	*Aeromarine Station*	
Belmont Park	UF	Fort Pond Bay	S	*Mitchel Field*		Wantagh	UF
Central Park	C	Fort Washington	S	Montauk Point	UF	Westbury	UF
Larsen Field		Garden City	G-C	Oceanside	UF	Woodbury	UF
College Point	CS	*Curtiss Field*		Oyster Bay	UFS	*Webb Field*	
Copaigue	UF	Gardiners Bay	S	Port Washington	S	Yaphank	GA
East Quogue	UFS	Gravesend Bay	S-UF	*Curtiss Station*		*Camp Upton*	

North Carolina

Asheville	UF	Dunn	UF	Lexington	UF	Salisbury	UF
Biltmore Estate		Edenton	UFS	Monroe	UF	Smithfield	UF
Beaufort	UFS	Elizabeth City	UFS	Moorhead City	GS	Southport	UFS
Belhaven	UFS	Fayetteville	GA	Newbern	SUF-UF	Swan Quarter	UFS
Camp Bragg	G	*Pope Field*		Newton	UF	Wadesboro	UF
Camp Glenn	UF	Greensboro	M	Oriental	UFS	Washington	UFS
Charlotte	UF	Hamlet	UF	Pinehurst	C	Weldon	UF
Coddington Field		Henderson	UF	Pineview	UF	Wilmington	S
Clinton	UF	Hertford	UFS	Plymouth	UFS	Winston-Salem	C
Columbia	UFS	Hopgood	UF	Riedsville	UF	*Maynard Field*	
Danville	UF	Kinston	UF	Rocky Mount	UF	Wrightsville Beach	UFS

North Dakota

Bismarck	GA	Fargo	UF	Judson	UF	Sedalia	UF
Ft. Lincoln	UF	Fort Lincoln	GA	Mandan	UF	Sims	UF
Dickinson	UF	Glenullin	UF	Minot	UF	Sunny	UF
Eagles Nest	UF	Grand Forks	UF	Portal	UF	Valley City	UF
Eldridge	UF	Hobart	UF	New Salem	UF		

Ohio

Akron	C-UF	Clyde	UF	Ironton	UF	Scotch Ridge	UF
Portage Country Club		Colton	UF	Johnsonville	UF	Shadyside	UF
Goodyear Field		Columbus	UF	Johnsville	UF	Springfield	UF
Alliance	UF	Cortland	UF	Kenton	UF	Sugar Ridge	UF
Arcanum	UF	Coshocton	UF	Kingsway	UF	Steubenville	UF
Ashley	UF	*Ricketts Field*		Liberty Center	UF	Stryker	UF
Ashtabula	UF	Dayton	2-C; GA	Lima	UF	Toledo	UF
Belleair	UF	*McCook Field*		London	UF	*Bay View Yacht Club*	
Blakeslee	UF	*Dayton Wright Field*		Lorrain	UF	Vermillon	
Bowling Green	UF	*Johnson Field*		Luckey	UF	Warren	M
Bristolville	UF	Delaware	UF	Mansfield	C	*Packard Park*	
Bryan	GPO	Dover	UF	Marion	UF	Wellston	UF
Burghill	UF	Dunbridge	UF	Marysville	UF	Wellsville	UF
Burton	UF	Fairfield	G	Middlefield	UF	West Dover	UF
Cambridge	UF	*Wilbur Wright Field*		Minerva	UF	Youngstown	UF
Camp Perry	UF	Findlay	UF	Newark	UF	Zanesville	UF
Canton	UF	Franklin	UF	New London	UF		
Castalia	UF	Galion	UF	North Dover	UF		
Cedar Point	UF	Gibsonburg	UF	Oberlin	C		
Cincinnati	UF	Grafton	UF	Painsville	UF		
Cleveland	C-S-GPO	Grand Rapids	UF	Pataskala	UF		
Aeromarine Terminal		Hamilton	UF	Piqua	UF		
Glenn L. Martin Field		Haskins	UF	Ravenna	UF		
Woodland Hills Park							

Oklahoma

Ada	UF	Drumright	UF	Kingfisher	UF	Ponca City	C
Altus	UF	*Cook's Aviation Field*		Lawton	GA	Prague	UF
Alva	UF	Duncan	UF	*Post Field*		Purcell	UF
Anadarko	UF	Durant	UF	Lexington	UF	Ripley	UF
Arapaho	UF	El Reno	UF	McAlester	UF	Sapulpa	UF
Ardmore	C	Elk City	UF	McLoud	M	Shawnee	UF
Atoka	M	Enid	C-M	*McCray Field*		*Santa Fe Field*	
Blackwell	UF	Fairview	UF	Macomb	UF	Stigler	M
Blanchard	UF	Fort Sill	GA	Mangum	UF	Stillwater	UF
Bryan	UF	*Post Field*		Marlow	UF	Texola	M
Chandler	UF	Frederick	M	Medford	UF	*Watson Field*	
Chattanooga	UF	Grandfield	UF	Mountain Park	UF	Tishomingo	UF
Cheyenne	UF	Guthrie	M	Muskogee	C	Tulsa	C
Chickasha	UF	Hartshorne	UF	Newkirk	UF	*Curtiss Airdrome*	
Clarimore	UF	Hennessey	UF	Norman	UF	Vinita	UF
Cleveland	UF	Henryetta	C	Mowata	UF	Walter	UF
Clinton	UF	Hobart	M	Oklahoma City	C	Watonga	UF
Coalgate	UF	*Raymond Goodson*		Okmulgee	UF	Waurika	UF
Collingville	UF	*Landing Field*		*Russell Field*		Waynoka	UF
Cordell	UF	Holdenville	UF	Pauls Valley	UF	Woodward	M
Cushing	UF	Hugo	UF	Pawnee	UF		
Devol	UF			Perry	UF		

Oregon

Albany	M	Dallas	M	LaGrande	M	Prineville	UF
Arlington	UF	*Lacreole Landing Field*		Lebanon	M	Roseberg	UF
Ashland	UF	Eugene	M-C	Lyons	UF	Saline	UF
Baker	UF	Grants Pass	M	*Martins Field*		The Dalles	UF
Burns	UF	Grenada	UF	McMinnville	C	Tillamook	M
Condon	C	Imbler	UF	Marhfield	M		
Corvallis	UF	Lakeview	UF	Medford	M		
Cottage Grove	UF	*Round-Up Field*		Pendleton	UF		
				Portland	M-C		
				Bloomfield			
				Avo Field			
				Cross Field			

Pennsylvania

Aaronsburg	UF	Franklin	C	Mercersburg	UF	Roaring Spring	UF
Altoona	UF	Fredonia	UF	Myersdale	M	Rockwood	UF
Beatty	UF	Genesee	UF	Middlebury Center	UF	Rowland	UF
Beaver Falls	UF	Gettysburg	G	Middletown	GA	Runville	UF
Bellefonte	GPO	Grassflat	UF	Mifflinburg	UF	Sandy Valley	UF
Bethlehem	UF	Greensburg	UF	Milford	UF	Safe Harbor	UF
Bigler	UF	Hamburg	UF	Millheim	UF	Shawville	UF
Bradford	UF	Harrisburg	G	Millmont	UF	Shenago	UF
Bridgeville	C	Harrison Valley	UF	Mingoville	UF	Smithfield	UF
Bustleton	GPO	Hartleton	UF	Mount Union	M	Snydertown	UF
Brookville	UF	Hatboro	C	New Berlin	UF	Springa	UF
Carmichaels	UF	Huntington	UF	Nequehoning	UF	Stroudsburg	UF
Carlisle	UF	Indiana	UF	New Brighton	UF	Stoneboro	UF

Pennsylvania—Continued

Chester	UF	Irwin	C	Norristown	UF	Sunbury	UF
Clarion	M	Johnstown	C	North Springfield	UF	Susquehanna	UF
Clearfield	UF	Kennersdell	UF	Numidia	UF	Swengel	UF
Clearville	UF	Knox	UF	Orangeville		Tamanend	UF
Confluence	UF	Kylertown	UF	Pardus	UF	Tarentum	UF
Crafton	UF	Lancaster	C	Peale	UF	Tionesta	UF
Crowl	UF	Latrobe	UF	Penllyn	UF	Uniontown	UF
Dauplin	UF	Laurelton	UF	Philadelphia	C-GS	Warren	UF
Drifting	UF	Lebanon	UF	*League Island Park*		Washington	UF
DuBois	UF	Leetsdale	C	*Fairmont Park*		Waynesburg	UF
Beaver Meadows		*Pittsburgh Airport*		Pittsburgh	GA	Westfield	UF
Edelman	UF	Lehighton	UF	Pittsville	UF	West Findley	UF
Elk Lick	UF	Lewiston	UF	Pittston	UF	White Valley	UF
Elysburg	UF	Ligonier	UF	Point Marion	UF	Wilkes-Barre	UF
Erie	UF	Marietta	UF	Quakake	UF	Williamsport	UF
Essington	S	Meadsville	UF	Rathmel	UF	Winburne	UF
Everett	UF	Mechanicsburg	M	Reading	UF	Woodland	UF
Fairchance	UF	Media	UF	Reynoldsville	UF	Woodward	UF
				Ringtown	UF	York	UF
						Youngstown	UF
						Zion	UF

Rhode Island

Apponaugh	UF	Fort Greble	UF	Quansett	UF	Westerly	UF
Hills Grove Field		Naragansett Bay	GS	Shannock	S	Woonsocket	UF
Bradford	UF	Newport	UF-S	Sandy Point	UF		
Collingwood	C	Pawtucket	UF	Slocum	UF		
East Greenwich	CUF	Providence	S	Weed River Junction	UF		
Gallaudet Field		*Gaspee Point*					
		Providence River					

South Carolina

Aiken	UF	Charleston	S-UF	Greenville	UF	Spartanburg	UF
Bamberg	UF	Chesterfield	UF	*Donaldson Field*		Sumter	UF
Beaufort	SUF	Columbia	UF	Latta	UF	Tillman	UF
Bennettsville	UF	Duewest	UF	Myrtle Beach	UF		
Camden	UF	Georgetown	SUF	Paris Island	SGMr.		

South Dakota

Aberdeen	UF	Newell	C-UF	Sioux Falls	C	Volga	C
Edgemont	UF	Mobridge	C	Tyndall	C	Watertown	C
Huron	C	Redfield	UF				

Tennessee

Albany	UF	Cowan	UF	Knoxville	UF	Morristown	UF
Alexandria	UF	Davis	UF	*Cherokee Country Club*		Nashville	UF
Bristol	UF	Dyersburg	UF	Lexington	UF	Somerville	UF
Chattanooga	M-C	Fayetteville	UF	Lynchburg	UF	Springfield	UF
Marr Field		Jackson	UF	Memphis	UF-SUF	Sweetwater	UF
Clarksdale	C	Jellico	M	Millington	GA	Tiptonville	UF
Clarksville	UF	Johnson City	UF	*Park Field*		Union City	UF
Cleveland	UF	Kingston	UF			Woodbury	UF

Texas

Abbott	UF	Bryan	UF	Electra	UF	Hester's Ranch	UF
Abilene	S	Cactus	UF	El Paso	GA	Hitchcock	UF
Alief	UF	Cameron	UF	*Fort Bliss*		Hollis	UF
Alpine	UF	Campbellton	UF	Everman	UF	Hondo	UF
Alta Loma	UF	Canadian	UF	*Barron Field*		Hot Wells	UF
Altuda	UF	Childress	UF	Fairbanks	M	Houston	G
Amarillo	UF	Chillicothe	UF	Farwell	UF	*Ellington*	
Angleston	UF	Cisco	UF	*Hamlin Field*		*Camp Logan*	
Archer City	UF	Clarendon	UF	Flatonia	UF	Huntsville	UF
Arcola	UF	College Station	UF	Fordyce	UF	Iowa Park	UF
Artesia	UF	Colorado	UF	Fort Clark	GUF	Jolly	UF
Austin	UF	Conroe	M	Fort Hancock	UF	Katy	UF
Penn Field		Corpus Christi	UF	Fort Stockton	GA	Kaufman	UF
Baird	UF	*Fort Scully*		Fort Worth	C	Kenedy	UF
Barstow	UF	Cotulla	UF	*Taliaferro Field*		Kernah	
Beaumont	M	Crowell	UF	Fredericksburg	UF	Kingsville	UF
Beeville	UF	Cuero	UF	Friona	UF	Langtry	UF
Belcherville	UF	Dalhart	UF	Gainesville	UF	Laredo	G
Benbrook	M	Dallas	C	Galveston	GA	*Fort McIntosh*	
Benchley	UF	*Dallas Air Port*		*Fort Crockett*		League City	UF
Big Spring	M	Danbury	UF	Giddings	UF	Lexington	UF
Blockbers Ranch		Decatur	UF	Grapevine	UF	Liberty	UF
Bloomington	UF	Del Rio	M-GA	Haskell	UF	Longfellow	UF
Bonham	UF	Denison	M	Hallettsville	UF	Lubbeck	UF
Bowie	UF	Denton	UF	Harne	UF	McAllen	UF
Bracketville		Desdemona	UF	Hawes	UF	McKinney	UF
Brenham		Dolores Mines	UF	*Love Field*		McLean	UF
Bridgeport	UF	Dryden	UF	Hebbronville	UF	Marathon	UF
Brownsville	UF	Eagle Pass	UF	Hempstead	UF	Marfa	GA
Brownwood	UF	Eagle Lake	UF	Henrietta	UF	Marlin	UF
Marshall	UF	Pearland	UF	San Ygnacio		Thorndale	UF
Memphis	UF	Pecos	UF	Sanderson	UF	Toyah	UF
Menard	UF	Port Arthur	GN	Seguin	UF	Tyler	UF
Midland	UF	Presidio	UF	Seymour	UF	Uvadale	UF
Midlothian	UF	Pumpville	UF	Sherman	UF	Van Horne	UF
Mineolo	UF	Quanah	UF	Shiner	UF	Vernon	UF
Moulton	UF	Richmond	UF	Shumla	UF	Victoria	UF
Mount Pleasant	C	Ringgold	UF	Sierra Blanca	UF	Vinton	UF
New Boston	UF	Rosenberg	UF	South Houston	UF	Von Ormy	UF
New Braunfels	UF	Sabinal	UF	*San Leon Field*		Waco	C-UF
New Castle	UF	Saint Joe	UF	Spoffard	UF	*Rich Field*	
Nacona	UF	Saltillo	UF	Stamford	UF	Washburn	UF

Odessa UF
Orange UF
Ozona UF
Paducah C
Palestine UF
Pandora UF
Paris M
San Angello UF-C
San Antonio 2-GA
Kelly Field
Brooks Field
San Benito UF
San Diego UF
San Marcos UF
Stanton UF
Sulphur Springs UF
Sweetwater M
Temple UF
Tesnus UF
Texarkana UF
Texline UF
Webb UF
Weatherford UF
Wellington UF
Wharton UF
Whitesboro UF
Wichita Falls UF
Call Field
Yoakum UF

Utah

Brigham UF
Marl Polo Field
Burgmestor UF
Coalville UF
Fillmore City UF
Garfield UF
Green River UF
Henefer UF
Hoytsville UF
Logan City UF
Lund UF
Lynndy UF
Manti UF
Milford UF
Ogden UF
Price M
Richfield UF
St. George UF
Salduro UF
Saltair UF
Salt Lake City C-GPO
Buena Vista Flying Field;
Woodward Field
Shafter UF
Vernal UF
Wendover UF

Vermont

Barre UF
Barton UF
Bellows Falls UF
Bennington UF
Brattleboro M
Burlington M-S
Cape Charles S
Coventry C
Danville UF
Greensboro UF
Hardwich UF
Montpelier UF
Post Milla UF
Randolph UF
Rutland M
St. Albans UF
St. Johnsbury UF
Springfield C
White River Junction M
Windsor UF

Virginia

Alexandria UFS
Barboursville UF
Berryville UF
Blackburg UF
Bluemont UF
Cape Charles UFS-UF
Carybrook UF
Charlottesville UF
Culpepper UF
Dahlgren UF
Danville UF
Drainesville UF
Dunnsville UF
Fairfax UF
Featherstone UF
Franklin UF
Fredericksburg UF
Front Royal UF
Hampton GA-S
Langley Field
Hampton Roads GN-S
Naval Air Station
Herndon UF
Keswick UF
Lawrenceville UF
Lee Hall GAB
Leesburg UF
Lyells UF
Lynchburg C
Y. M. C. A. Island
Manassas UF
Martinsville UF
Maryton UF
Mt. Holly UF
Newport News C
Curtiss Field
Norfolk GA-M-C-SN
K. C. L. Norfolk Airport
Oldfield UF
Quantico S-GMr
Richmond C-UF
Shepherds Field
Riverton UF
Roanoke UF
Sandy Point UF
Staunton UF
Lyle Field
Tappahannock UF
Urbana UF
Warsaw UF
West Point UF
White Marsh UF
Williamsburg UFS
Winchester UF
Yorktown SUF-UF

Washington

Aberdeen C
Bellingham UF
Birch Bay UF
Blaine UF
Camp Lewis GA
Centralia UF
Chehalis UF
Davenport UF
Nichols Field
Ellensburg UF
Everett UF
Irvin UF
Kent C-UF
Kenwick M
Millwood UF
Montesamo C
Brady Field
Parkwater UF
Pasco M
Pomeroy C
Port Angeles GNS
Port Townsend G
Puyallup UF
Renton UF
Republic UF
Ritzville UF
Seattle GPO-C-S
Sand Point
Boeing Port
Spokane M
Foster Field
Northwest Aircraft
Flying Field
Tacoma UF
Speedway Field
Talmadge UF
Uniontown UF
Vancouver G
Walla Walla C-UF
Washington UF
Waterville UF
Wenatchee UF
White Bluffs C
Yakima M

West Virginia

Beach Bottom UF
Bluefield
Capon Bridge UF
Charleston UF
Charlestown UF
Clarksburg UF
Ellenboro C
Greenspring UF
Huntington UF
Inwood UF
Lamberton UF
Martinsburg UF
Van Metre Blue Grass Field
Morgantown UF
Moundsville GA
Langin Field
Paw Paw UF
Romney UF
Sisterville UF
Summerville UF
White Sulphur Springs UF
Wilber UF

Wisconsin

Alma UF
Barnum UF
Bay City UF
Boscobel UF
Buffalo
Byrds Creek UF
Cochrane UF
Cross Plains UF
Diamond Bluff UF
Eau Claire C-M
Ferryville UF
Fountain City UF
Gotham UF
Green Bay
Hager City UF
Johnson UF
Kenosha UF
LaCrosse M
Saltzer Field
Lake Mills UF
Lone Rock UF
Madison UF
Maiden Rock
Marshfield C
Mazomanie UF
Milwaukee 2C-M
Milwaukee County Airport
Lawson Field
Brown's Field
Muscoda UF
Oshkosh C
Pepin UF
Pleasant Branch UF
Purdy UF
Rhinelander M
Spring Green UF
Stevens Point
Stockholm UF
Superior UF
Waukesha UF

Wyoming

Buford UF
Buffalo UF
Burns UF
Casper C
Castle UF
Centennial UF
Cheyenne GPO
Fort D. A. Russell
Cody UF
Dad UF
Egbert UF
Elk Mountain UF
Evanston UF
Filmore UF
Encampment UF
Fort Bridger UF
Gillette UF
Granger UF
Green River M
Greybull UF
Guernsey UF
Lander UF
Laramie M
Lusk UF
Lyman UF
Medicine Bow UF
New Castle UF
Pine Bluffs UF
Rawlins GPO-M
Riverton UF
Rock River UF
Rock Springs GPO-G
Sheridan M
Shoshoni UF
Sundance M
Thermopolis UF
Wamsutter UF
Wheatland UF
Worland UF

ISLAND AND TERRITORIAL POSSESSIONS

Alaska

Chestochina UF
Circle UF
Eagle UF
Fairbanks UF
Fort Gibbon UF
Fort Yukon UF
Kalltag UF
Ketchikan UF
Petersburg UF
Richardson UF
Ruby UF
St. Michael UF
Seward GN
Shakan UF
Sitka GN
Skagway UF
Tanana UF

Guam

Apra	GN						

Hawaiian Islands

Hanemaulu	UF	Honolulu	G	Kahului Harbor	UFS	Pearl Harbor	GNS
Hawan	UF	*Fort Ruger*		Maui Island	S	*Luke Field*	
Hilo Bay	UF	*Fort Kamehameha*		Molokai	S		
		Wheeler Field					

Panama Canal Zone

Almirante Bay	UF	Coco Solo	GNS-GA	Christobal	G	Cristobal	G

Philippines

Bagulo	UF	Cavite	G	Lucena	G
Camp Stotsenburg	G	Corregidor	G	Manila	M
Clark Field		*Kindley Field*			

Virgin Islands

St. Croix	UF

Italian Air Routes

In view of the renewed activity which the Italian aeronautical world is experiencing under the impulsion of the *fascista* government, three of whose members are airmen, the following notes on Italian air routes are of interest.

Italy is a mountainous country; besides, it is very small in size compared with the United States. Rome, the capital, is right in the center of the territory, which is constituted by a peninsula and two isles.

Night trains, leaving Rome at 8 p. m., reach the northern or southern border the next morning. It is very hard, therefore, to establish an air transport service which could compete with the railroad. However, a definite program of the Italian Air Routes has been laid, using the same routes which were employed during the war to send the aircraft from the factories to the front line. The air routes follow the valleys and the coasts in order to avoid the mountains. They cross the Apennines Mountains only in two points.

The network of air routes which it is intended to organize will be about 2400 miles long, as follows:

1. Nice-Rome-Foggia-Brindisi	700 miles
2. Udine-Bologna-Foggia	500 miles
3. Turin-Milan-Trieste	320 miles
4. Milan-Sarzana	120 miles
5. Piacenza-Bologna	100 miles
6. Innsbruck-Verona	150 miles
7. Campiglia-Cagliari	300 miles
8. Naples-Catania	250 miles
Total	2440 miles

The first named of these air routes will form the Italian section of an international route which is to lead by way of Nice, France, to Paris and London, and via Brindisi to the Near East.

Various air transport services are now under consideration. One, using airships, is to connect Italy with Lybia, its African colony, and operate between Rome and Tripolis (640 miles) with a possible extension to Bengasi (410 miles) and from there to Alexandria, Egypt (620 miles). The trip from Rome to Alexandria could be made in two days as against five with the present means of transport.

The proposed airships are to accommodate thirty passengers, and have a speed of from 55 to 70 m.p.h. at cruising speed, while the top speed, 80 m.p.h., would leave a sufficient margin to make up for delays or for climbing to the altitudes necessary to pass over the mountain ranges or plateaus. The climbing speed under full power would be 35 ft. per second.

In view of the large tourist traffic to Egypt, and the stormy sea passage frequently experienced, it is believed that such an airship service would soon become self-supporting. Furthermore, many wealthy Italians are located at Alexandria, Egypt, and are frequently visiting Italy for business or pleasure; and making the trip on the fastest steamers costs about 4,000 lire, while the proposed aerial route would only cost about 2,500 lire, so that the economic aspects of the service look hopeful enough.

Seaplane services are also to be organized, chiefly with the Near East. A route from Brindisi to Athens and Constantinople is in particular being studied.

The Gypsy Flier's Viewpoint

The following is from a gypsy aviator who during the last two years has been barnstorming around the country. He writes:

"The gypsy flier is the man who kept aviation alive after the war by flying in the country districts, far from established airplane fields. He is usually a good fellow, always broke, full of hopes, and if he sticks long enough will be a good pilot, as he hits more cornfields than aviation fields. His ship is usually in poor condition, due to the fact that he has no shelter for it and as a rule cannot afford to repair it unless absolutely necessary. More often than not it was a condemned war training plane when he bought it. My experience as a gypsy flier has convinced me that it does not pay. The public has not enough confidence in aviation to ride with a man they have never heard of and though I tried to get passengers to ride for two dollars and a half, they went instead to a field run under the same management for some time and paid ten dollars. They had heard of the pilot, he was well known in their section and belonged to a lodge, his ship was in good condition, and storms of the season had left their mark on my old ship. The man flying from an established field had more of an opportunity to get by than the gypsy flier, as he can usually fly with newspapers as freight, and gets the same passengers, who as their confidence grows, use his plane as transportation for business trips that are important."

The Gothenburg Aero Exhibition

As has already been announced some time ago in AVIATION, the City of Gothenburg, Sweden, the chief shipping port and export harbor of that country, will celebrate the Tercentenary of its foundation with a Jubilee Exhibition to be held from May 8 to Sept. 30, 1923.

The Committee in charge of the Aero Exhibition invites special attention to the 50 per cent reduction of sea rates, which may be of interest to such American manufacturers of aircraft as may contemplate sending exhibits.

The Exhibition will include various types of airplanes, accessories, gliders, helicopters, equipment for airdromes, wireless telegraph and telephone service, aerial topography, aeronautical patents and inventions, model flying, artistic paintings, sculptures and engravings with aeronautical motifs, etc.

Recent Aircraft Engine Development

From the Administrative Report of the N.A.C.A.

The administrative report of the National Advisory Committee for Aeronautics, which has been issued in advance of the full annual report for 1922, contains some interesting information on recent aircraft engine development. The report says in part:

Several new types of aircraft engines have been designed, and some completed, during the past year, by the Bureau of Aeronautics of the Navy Department and the engineering division of the Army Air Service.

The 300 hr. Test

One of the most important advances in increasing the reliability of aircraft engines was the adoption by the Bureau of Aeronautics of the Navy Department of specifications covering a 300-hr. endurance test to which all types of engines will be subjected prior to acceptance for service. Previously it has been considered that if an engine could complete a 50-hr. endurance test it was quite satisfactory. The Bureau of Aeronautics, realizing that the failure of aircraft engines is directly attributed to the failure of minor parts, initiated a 300-hr endurance test, and as a result engines which were previously considered suitable for only 50 hr. of service have been developed to successfully complete tests in accordance with the 300-hr. specifications. The first engine to undergo this test was the Aeromarine U8D, which was followed a few weeks later by the Packard 1551 airship engine. In June, 1922, the Wright E2 engine was operated continuously for 250 hr. at wide-open throttle, and showed special durability during this run. As a result of the 300 hr. continuous-operation tests, it has been possible to develop intake and exhaust valves which will stand 300 hr. of continuous operation.

The engineering division of the Army Air Service has been concerned chiefly with the final development of the model W 700 hp. engine. This engine has so far passed a successful 50 hr. endurance test, and has been installed and tested in a model GA2 airplane. The development of the 1,000 hp. model W 18-cyl. engine is still being continued, and tests are being made of the component parts, such as cylinder head, pistons, etc.

The Army Air Service has continued the development of the Almen barrel-type engine, and has recently tested the latest model of this engine, which developed 350 hp.

Supercharger Development

Supercharger development has continued along the lines of adapting the exhaust driven type to different engines and the redesigning of the compressor element so as to be geared-driven from the engine. New designs provide for the placing of the supercharger at the side of the engine, and further provide for automatic waste-gate control. Installation and tests have been started of the Sturtevant geared supercharged in the DH4B airplane, with Liberty engine.

The engineering division has further continued its study of air-cooled cylinders, carburetors, and ignition systems. Tests have been conducted in flight on different types of cooling systems, in cooperation with the Bureau of Standards, with a view to working out a practical method for the design of radiators of given types for known conditions. Fifty-hour service tests have been conducted on the 1921 Liberty engine, the Curtiss CD-12, the Wright model 2 with light pistons, and the Packard 2025 engine.

The Bureau of Aeronautics of the Navy Department has successfully developed an air-cooled engine, with the cooperation of the Lawrence Aero Engine Corp. The Bureau of Aeronautics developed a set of specifications in June, 1921, and in November of the same year the first experimental engine was delivered to the aeronautical engine testing labratory at the Washington Navy Yard. A complete and exhaustive study was made to determine the weak points of the engine. Subsequent engines have incorporated in their designs new features which were developed as a result of these tests. The engine is now in production and is known as the Lawrence D1, developing 220 hp. at 1,800 r.p.m., the total weight being 425 lb.

The Wright E2, 180 hp. engine was subjected to a service test at the Washington Navy Yard, and it was found that there were a few details in the construction which limited its service performance to not more than 50 hr. without overhauling. After exhaustive tests the Wright Aeronautical Corp. modified the original E2 in accordance with Navy specifications and developed the E3. The changes involved consist of open cylinder sleeves, silchrome valves, aluminum-bronze valve seats, and Kelly metal for the main and connecting-rod bearings. With the new modifications the engine successfully passed a 250 hr. endurance run, developing more than its rated horsepower during the complete test.

The Curtiss CD12 pursuit engine was modified according to specifications with the cooperation of the Curtiss Aeroplane & Motor Corp. The redesigned engine was renamed the D12 and is essentially the same as the original CD12 engine, having, however, heavier crankshaft, silchrome valves, and a number of other features which make it one of the most reliable engines in the country.

The Aeromarine U Engines

The Aeromarine Plane & Motor Co., with the assistance of the Bureau of Aeronautics, has developed a six-cylinder vertical-in-line engine for lighter-than-air craft. The notable features of this engine, which is known as the U6D, are monolithic cylinder construction, removable cylinder sleeves, removable cylinder heads, and a new type valve gear arrangement.

As a result of the excellent performance of the Aeromarine U6D airplane engine, the Bureau of Aeronautics prepared specifications covering the development of a similar engine of the eight-cylinder type. The eight-cylinder engine has its cylinders set at 60 deg., develops 220 hp. at 1,800 r.p.m., and was the first engine to complete successfully the standard 300 hr. endurance test required by the Bureau of Aeronautics.

The Bureau of Aeronautics contracted with the Packard Motor Car Co. for the design and development of an airship engine to incorporate as its main features reliability and durability. The first engine has been delivered, and passed the standard 50 hr. acceptance test. The characteristics of the engine are individual cylinder construction, permitting the removal of any one cylinder without removing the engine from the power car, better ignition system, and low fuel consumption with great durability. The engine has recently successfully completed a standard 300 hr. endurance test, developing approximately 340 hp. at 1,400 r.p.m.

The Wright Aeronautical Corp. has developed for the Bureau of Aeronautics a 12-cylinder 60 deg. V engine of 525 hp. at 1,800 r.p.m. This engine was designed principally for installation in torpedo-carrying airplanes. The first engine of this type has completed the standard 50 hr. acceptance test, the principal characteristics of the construction being open cylinder sleeves, removable cylinder heads, and aluminum-bronze valve seats.

Pensacola Radio Compass Station

A radio compass station for aircraft only, is located at Pensacola, Fla.; call letters NAS; wave lengths 800 meters. This station has been calibrated over an arc of 100° between the bearings 130° and 230°. Compass bearings are reliable only within the calibrated arc. Bearings are given from the station.

Approx. position: 30° 19′ 42″ N., 87° 10′ 10″ W.

(N. A. 1, 1923.)

U. S. Coast Survey Chart 49°.

London–Berlin Airway Service Proposed

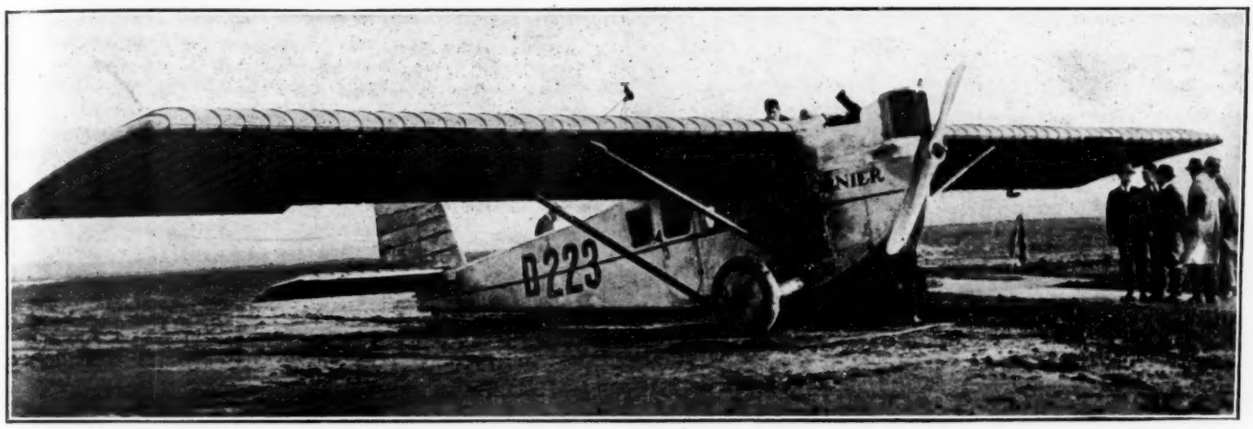
First German Civil Airplane Lands in England

A regular air service between Berlin and London is to be inaugurated soon, according to the German Air Transport Co. (Deutsche Luft Recderei). The service will be operated jointly by the Daimler Airway Co., the Royal Holland Air Service, and the German Air Transport Co.

Flights will follow the Berlin-Hamburg-Bremen-Amsterdam route to Croydon Field, near London, connections being made at Hamburg with Copenhagen. German airplanes will fly the entire distance from Berlin to London simultaneously with Dutch and English planes.

The flying time between Berlin and London is estimated at 6½ hr. Passenger rates will be a little more than those for first-class transportation on railways and steamships between the two points.

Three officials of the German air line reached London on Jan. 1 by air from Berlin for the purpose of discussing the details of the arrangement. Thus, for the first time since the war, a German aircraft piloted by a German pilot voluntarily landed in England. The airplane in question was a Dornier "Komet" all-metal cabin monoplane, which is equipped with a 185-240 hp. B.M.W. engine.



The first German civil airplane that landed in England since the war: Dornier "Komet" all metal cabin plane for five passengers. Note German civil aircraft markings

Prior to Jan. 1, 1923, German aircraft were prohibited, under the treaty of Versailles, from flying into Allied countries, while Allied aircraft could freely fly over and land in Germany. Now the only restrictions placed on German aircraft (Note of the Council of Ambassadors, April 14, 1922) are as follows:

Limitations of German Aircraft

1. A single-seater with greater engine power than 60 hp. is considered a military machine.

2. Every aircraft which is capable of flying without a pilot is considered a military machine.

3. Every aircraft which is armored, or which has any provision for mounting guns, bombs, etc., is considered a military machine.

4. The "ceiling" with full load of any German commercial aircraft is not to exceed 4,000 m. (13,100 ft.), and the fitting of an aircraft with a high-compression engine will place that aircraft in the category of military machines.

5. The maximum speed with full load and at a height of 2,000 m. (6,500 ft.) is not to exceed 170 km. (105 miles) per hour at the maximum power of the engine.

6. The amount of oil and fuel (best quality of aviation gasoline) carried on board must not exceed $\frac{800 \times 170}{V}$ grammes for each horsepower (where V is the speed at full power and 2,000 m).

7. Every aircraft whose useful load, including pilot, engineer, and instruments, exceeds 600 kg. (1,320 lb.) is considered a military machine if the maximum conditions as under 4, 5 and 6 are attained.

Airships whose volume exceeds the following figures are considered as war material, and are prohibited:—Rigid airships, 30,000 cu. m. (1,060,000 cu. ft.); semirigid airships, 25,000 cu. m. (884,000 cu. ft.); nonrigid airships, 20,000 cu. m. (760,000 cu. ft.).

Factories turning out aircraft shall be registered. All aircraft and pilots, or pilot apprentices shall be listed in accordance with the conditions provided for in the covenant of Oct. 13, 1919. These lists will be kept at the disposition of the Committee of Guarantees.

The stocks of aeronautical engines, and of spare parts and accessories, shall not be permitted in excess of what will be considered necessary to satisfy the needs of civil aeronautics. These quantities shall be determined by the guarantee committee.

A revision of the above definitions is contemplated after two years, so that such modifications as the progress of aeronautics demands may be given consideration.

The Committe of Guarantees was appointed by the Council of Ambassadors to ensure that the regulations framed to define Germany's position in the air are followed. This Committee of Guarantees is composed of representatives of Great Britain, France, Italy, Japan and Belgium. England is represented by three officers, and the other countries mentioned by two officers each. The Committee is to have the right to visit any aircraft factory, or plant devoted to the manufacture or repair of aircraft and aero engines and other material, at any time, and is to be provided by the German government with full particulars of all machines and engines built and of all commercial air services being operated by German firms.

The Committee takes the place of the Inter-Allied Control Commission which was dissolved on May 5, 1922.

The Germans' Present Aim

It is reported that now that Germany is again empowered to assert over her territory the principle of "air sovereignty" embodied in the International Air Convention, she will subject the ex-Allied civil aircraft flying into Germany to the restrictions imposed upon German aircraft. As under such conditions international air transport would be practically impossible, the Germans hope to bring about in this manner the lifting or the alteration of the Allied restrictions. It appears that the establishment of the London-Berlin service will largely depend on these conditions.

Huff-Daland Western Office Closed

The Huff-Daland Aero Corp. has temporarily closed its western office at 1018 Commerce Bldg., Kansas City, Mo., during the winter months and will carry on its sales work at the Huff-Daland Factory in Ogdensburg, N. Y., until the spring flying season commences.

The parent company has been intensely occupied with the development of Army and Navy airplanes ever since the production of their first thick-wing biplane in the early fall of 1921, and the advent of the Petrel, the first successful cantilever biplane to be placed upon the commercial market in the United States, which made its appearance in the spring of 1922. The Petrel was quickly followed by the Lawrance motored TA2 training plane, produced for the United States Army, and the HN1 training and gunnery seaplane, powered with the Wright E2 motor, which was developed for the United States Navy. Both types were completed and fully flight tested during the past summer, the HN1 being delivered by air on its maiden flight along the all water route from Ogdensburg to Washington, D. C., during the latter part of August. The company was rewarded in both cases with additional orders for ships of the same general class, resulting in the present construction of the HO1 and TA6 types.

Huff-Daland & Co. is now calling together the men who handled its sales work and commercial flying during the past year with a view to collaborating with them upon the results of the year's flying and completing the Petrel for 1923.

Loss of the Flying Boat Columbus

AVIATION deeply regrets to have to record the first serious accident of American civil air transport. On Jan. 13 the passenger flying boat Columbus, of the Aeromarine Airways, Pilot C. W. Miller, Mechanic H. Thompson, with seven passengers and 400 lb. of mails and sundry baggage enroute from Key West to Havana, foundered in the Straits of Florida with a loss of four passengers. Those lost include Edwin F. Atkins, sugar planter, his sons Edwin F. and David, aged 5 and 3 years, respectively, and Miss Grace Mac Donald, governess of the Atkins children.

The Columbus, which had regularly been flying on this route, was about 20 miles from Havana, when engine trouble developed and the pilot decided to make a landing. Ten to fifteen feet waves were running at the time, and one of them hit the boat amidships and badly damaged her hull, which began filling with water. The passengers climbed on top of the cabin, but Mr. Atkins and Miss Mac Donald were soon swept over board by a big wave and drowned, while the two children who were sleeping in the cabin were either killed through the impact or drowned in the wrecked cabin.

Rescue came through the daring of Capt. John Albury and his men of the ferry ship H. M. Flager, who launched a lifeboat and fought their way to the side of the Columbus, and took off the five survivors just before the flying boat heeled over and went down. All the baggage and mails were also lost.

Aeronautical Safety Code

In an article appearing in the Oct. 30, 1922, issue of AVIATION there was outlined the work accomplished by the American Sectional Committee for the Aeronautical Safety Code. It was stated in this connection that when the various parts of the Safety Code now under development receive the approval of the Sectional Committee, the work will be published as the first edition of the American Aeronautical Safety Code.

The Standards Department, Society of Automotive Engineers, advises us that the Sectional Committee cannot by its own action approve its report as an American Aeronautical Safety Code. The Sectional Committee was organized by the Bureau of Standards and the Society of Automotive Engineers, and must therefore report to its two sponsors. Its report must be approved by these sponsors and by the American Engineering Standards Committee before it can become an American Standard.

An Interesting Competition

The Paris daily *Le Petit Journal* has offered a prize of 125,000 francs for a competition of low-powered airplanes which is to take place on July 8, 1923, at a place yet to be named. The competition is open to airplanes of French construction and ownership, and the pilot must also be French. A maximum weight limit of 250 kilograms, fully loaded, is specified for single-seater airplanes, and one of 320 kilograms for two-seaters.

The rules of the competition provide that contestants shall undergo *construction and flight* trials before they will be authorized to compete in the competition proper. In the construction trials the airplane will be subjected to a static test in which it will have to withstand a load factor of 3 without showing permanent deformation. No destruction test will be carried out. In the flight elimination test the machine shall climb with full load 500 meters in less than 30 min.

The final competition will consist of a 300 kilometer race around a 10 kilometer circuit. The weight of gasoline and oil the contestants are authorized to carry on board shall not exceed 20 kilograms. However, for reasons of safety, an auxiliary tank, containing not more than 3.5 kilograms of fuel, may be carried on board. The gas control of the auxiliary tank shall be sealed before the start, and the breaking of this seal shall eliminate the contestant.

Failure to complete the 300-kilometer distance with the obligatory fuel load will also eliminate the contestant. The winning airplane will be the one that covers the greatest number of laps additional to the 300 kilometers.

Amundsen's Trans-Polar Flight

Recent newspaper dispatches state that Captain Roald Amundsen, head of a Polar Expedition that left Seattle, Washington, last June, arrived in Nome, Alaska, by dog team. Captain Amundsen came from Wainwright, near Point Barrow, where he is wintering with the plane in which he hopes in the spring to fly over the North Pole.

Upon arriving at Deering, Alaska, on July 5, their stay became longer than was anticipated owing to reports that the ice was still blocking Point Hope, some one hundred miles farther north. During their stay at Deering, Lieuts. Ondal and Dahl put in order the Curtiss "Oriole", by means of which it was intended to make a closer investigation of the ice conditions. It was amazing to observe the natives when Lieut. Ondal made his first flight. They were in doubt to the very last, laughed and shook their heads. Suddenly the apparatus dashed off amidst a shower of dust and gravel, and the smiles died away on their faces, to be replaced by astonishment. Then the wheels left the ground, the horizon became visible under them, and before the natives could recover their power of reasoning the miracle was soaring high above their heads. The white population threw their caps into the air, whistling and shouting. The natives were more reserved in their outburst. The flight turned out a perfect success, and the airman and his feat will go down to posterity in this place.

Wainwright, the present headquarters of the Expedition, is a little Eskimo village with a school and approximately 200 inhabitants.

The Next Pulitzer Trophy Race

Under the above heading there was published in the Jan. 1 issue of AVIATION an item concerning the preparations made by the National Aeronautic Association for the forthcoming Pulitzer Trophy race. Owing to a printing error Lieut. A. J. Maitland was mentioned as the winner of the second Pulitzer race when it should have read *winner of the second place* in the Pulitzer race. As our readers well know, the 1922 Pulitzer Trophy race, which was the third contest for this trophy, was won by Lieut. R. L. Maughan, A. S. on an Army-Curtiss racer at an average speed of 205.8 m. p. h.

ARMY AND NAVY AIR NEWS

Air Service

Eligibility for Appointment as Flying Cadet—The Air Service circular concerning the general requirements for eligibility for appointment as flying cadet, which has previously been printed in these columns is republished at the request of the Air Service. Attention is called to the next examination which will be held Tuesday, July 2, and to that Ross Field has been eliminated as a station at which examining boards function.

The following are eligible for appointment as flying cadet: (1) Enlisted men of the Regular Army; (2) Civilians.

Candidates must be, at time of application; (1) Unmarried male citizens of the United States; (2) Between the ages of 20 and 27 years; (3) High-school graduates, or possess the equivalent of a high-school education; (4) Of excellent character; (5) Of sound physique and in excellent health.

Examinations will be held the second Tuesday in January and July. The educational examination may be omitted if the applicant presents documentary evidence of his graduation from a high school within two years immediately preceding date of this examination or of his attendance at a recognized college or university within that time.

The base pay of flying cadets is $75 per month, which includes extra pay for flying risk. The ration allowance will not exceed $1.00 per day; the other allowances such as clothing, equipment, etc., are those of a private first class, Air Service. Applicants from civil life will be required to pay all expenses incident to their appearance before the examining board for examination and no claim for reimbursement of the expenses incurred prior to enlistment, will be considered.

Application blanks may be secured from the Chief of Air Service, Washington, D. C., and must be submitted in triplicate, accompanied by three letters of recommendation, signed by persons of recognized standing in the community of the applicant.

The term of enlistment of flying cadets is three years, but they are discharged upon completion of or failure to complete the prescribed course, and are not required to serve the unexpired portion of their enlistment period. The courses of training normally require fourteen months for heavier-than-air and nine months for lighter-than-air.

Flying cadets who successfully complete the prescribed course of training will be commissioned 2nd lieutenants in the Air Service Officers' Reserve Corps (inactive status), and, upon discharge, receive such travel pay and other allowances as are given other enlisted men when discharged from the service.

Examining boards are now located at the following stations:
Mitchel Field, Long Island, N. Y.
Bolling Field, Anacostia, D. C.
Langley Field, Hampton, Va.
Montgomery Air Intermediate Depot, Ala.
McCook Field, Dayton, Ohio.
Chanute Field, Rantoul, Ill.
Scott Field, Belleville, Ill.
Selfridge Field, Mt. Clemens, Mich.
Hawaiian Department, Luke Field, H. T.
Aberdeen Proving Ground, Md.
Kelly Field, San Antonio, Tex.
Brooks Field, San Antonio, Tex.
Crissy Field, San Francisco, Cal.
Fort Bliss, El Paso, Tex.
Fort Riley, Kansas.
Philippine Department, Manila, P. I.
Panama Canal Department, Cristobal, C. Z.

Death Notice—The following death notice is issued by the Adjutant General's Office:

FONDA B. JOHNSON

Born in N. Y., Mar. 10, 1891, Appointed from New York. 2nd Lt. A. S., July 1, 1920, 1st Lt., July 1, 1920, Accepted, Nov. 25, 1920.

In Federal service other than the permanent establishment: Pvt. 1 cl. Av. Sec., Sig. ERC, Feb. 9, 1918, to Oct. 25, 1918, 2nd Lt. A.S., U.S.A., Oct. 26, 1918, accepted, Oct. 26, 1918, Hon. disch., Aug. 2, 1920.

Service—On duty at Taylor Field, Ala., Oct. 26, 1918, to Nov. 7, 1918; at Rockwell Field, Cal., Nov. 13, 1918, to July 15, 1919; at Kelly Field, Tex., July 19, 1919, to Aug. 22, 1919; at Laredo, Tex., Aug. 22, 1919, to Aug. 2, 1920; honorably discharged Aug. 2, 1920, at Laredo, Tex. Reappointed in the Air Service, U. S. Army, with rank from July 1, 1920; on duty at Camp Dix, N. J., Dec. 9, 1920; at Mitchel Field, Dec., 1920, to May 6, 1921; temp. at Langley Field, Va., May 6, 1921, to Oct. 15, 1921; enroute to and at Ellington Field, Tex., Oct. 24, 1921, to June 26, 1922; on detached service at Mitchel Field, Nov. 20, 1921, to Dec. 5, 1921; on detached service at Fairfield, Ohio, Sept. 18, 1922, to Nov. 11, 1922; temp. at Selfridge Field, Mich., Oct. 6, 1922 to Oct. 18, 1922; temp. at Langley Field, Va., Oct. 20, 1922, to Oct. 26, 1922; at Kelly Field, Tex., June 30, 1922 to Jan. 10, 1923. He died Jan. 10, 1923, at Kelly Field, Tex.

* * *

Wearing Medals with Civilian Clothes—Because of the limitations imposed upon members of the Army in the wearing of medals and decorations with civilian clothers, there has been considerable misunderstanding concerning the rights of former service men in this respect. In order to remedy this condition the Secretary of War has caused the following additions to be made to Army Regulations:

> "Nothing in these regulations will be construed as prohibiting civilians who are entitled in their own right to decorations, service medals, and badges, from wearing on all appropriate occasions such decorations, servier medals, and badges with civilian clothes of any kind, nor as restricting the method of wearing to that prescribed in these regulations."

The War Department has never claimed jurisdiction over this matter, but numerous inquiries have indicated the general desire of ex-service men to conform to the official interpretation of propriety in the use of medals. The War Department considers it very desirable that authorized medals and decorations be worn on every approprate occasion with any kind of civilian clothes.

* * *

Distinguished Service Medal Citation—The Secretary of War has issued the following D.S.C. citation:

James Franklin McFadden, Lt. Col., Air Service, U. S. A. For exceptionally meritorious and distinguished services. As officer in charge of the Leave Bureau at Headquarters, Services of Supply, Tours, France, from Dec. 14, 1918, until June, 1919, by his energy, loyal devotion to duty, unusual executive and administrative ability, he was largely responsible for the successful organization and most efficient functioning of that highly important bureau which provided transportation, quarters, subsistence, recreation and amusement for over 400,000 men on leave from the front in nineteen different leave areas in Southern France. In a position of great responsibility, he rendered conspicuous services to the American Expeditionary Forces. Residence at appointment—Rosemont, Del. Co., Penna. Present address—same.

Howard E. Coffin, Pres. B. H. Mulvihill, V. Pres.

Official Bulletin of National Aeronautic Association of U.S.A.

B. F. Castle, Treas. John B. Coleman, Rec. Sec.

Col. H. E. Hartney, General Manager Cable Address, Nataero
National Headquarters, 26 Jackson Place, Washington, D.C.

The National Aeronautic Association of U.S.A. assumes responsibility for the statements under this heading

N.A.A. Organization

By courtesy of AVIATION the National Aeronautic Association of U.S.A. is permitted to present to its members and to the public-at-large, the roster of the Officers, Governors, and Committee Members of the National Headquarters and the nine Districts throughout the country.

The President of the Association is Howard E. Coffin of Detroit, Vice President of the Hudson Motor Car Co., formerly a member of the Naval Consulting Board, Council for the National Defense, Aircraft Production Board, and the American Aviation Mission. Mr. Coffin's business address is—Hudson Motor Car Company, Detroit, Mich.

The Resident Vice President is Bernard H. Mulvihill of Pittsburgh, President of the Natural Gas Conservation Co. He was an Officer of the 107th Field Artillery and the U. S. Air Service. His business address is B. F. Jones Building, Pittsburgh, Pa.

The Treasurer of the Association is Col. Benjamin F. Castle, an Officer of the Irving National Bank, New York, a graduate of the U.S. Military Academy at West Point, and was Lieut. Colonel in the Army Air Service, and Air Attaché to the U. S. Embassy at Paris. His business address is: Irving National Bank, New York, N. Y.

John B. Coleman, Recording Secretary of the Association, is a broker and manager of the John B. Coleman Co., of Sioux City, Iowa. He was a Second Lieutenant and Observer in the Army Air Service during the war. His business address is 305 Metropolitan Building, Sioux City, Iowa.

First District

The First District of the National Aeronautic Association comprises the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut. Porter Adams, the Vice President and Governor is an Engineer and President of the A. I. D. Inc., Developing Engineers. He is a graduate of the University of Redlands, Calif. and of the Massachusetts Institute of Technology. He was an officer in the Naval Aviation force during the war. His business address is—1362 Beacon Street, Boston, Mass.

Godfrey L. Cabot, Second Governor of the First District is one of the oldest pilots in the country, is a manufacturer, and, during the war was an officer in the Naval Aviation forces, and Commanding Officer at the Marblehead Aviation Camp. Mr. Cabot has been identified with aeronautical activities in this country for many years. His business address is 940 Old South Building, Boston, Mass.

Second District

The Second District of the Association comprises New Jersey, New York, Delaware and Porto Rico. John D. Larkin, Jr., of Buffalo, N. Y. is the Vice President and Governor of this District. Mr. Larkin is a manufacturer, and is President of the Larkin Co. of Buffalo. During the war Mr. Larkin was active in war work having turned over his entire industry to the work.

His business address is—Care of the Larkin Company, Buffalo.

Third District

The Third District of the Association comprises Maryland, Pennsylvania, Virginia, and the District of Columbia. The Vice President and Governor of this District is L. F. Sevier of Pittsburgh who is a well-known automobile man. His business address is Forbes & Craig Sts., Pittsburgh, Pa.

R. J. Walters, the Second Governor of this District is President of the Tire Corp., and a Director of the National Tire Dealers Association. Mr. Walters was a Captain in the Army Signal Corps during the war. He is the owner of a seaplane transportation company operating from Baltimore. His business address is 500 Pennsylvania Avenue, Baltimore, Md.

Fourth District

The Fourth District of the Association comprises Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina and Tennessee. The Vice President and Governor of this district is L. Sevier, President of the Alabama Manufacturers Association, who has been connected for many years with the railroads and the steel manufacturing business in the South. His business address is Care of the Alabama Manufacturers Association, Birmingham, Ala.

Van Hampton Burgin is Second Governor of this District and is a member of the firm of Burgin & Moore, Insurance. During the war Mr. Burgin was in the Army Air Service, 13th Aerial Squadron, 2nd Pursuit Group; fought on the Toul Sector and St. Mihiel drive. His business address is 217 Healy Bldg., Atlanta, Ga.

Fifth District

The Fifth District of the Association comprises Indiana, Kentucky, Ohio and West Virginia. The Vice President and Governor of this District is Glenn L. Martin, the airplane manufacturer of Cleveland, Ohio. Mr. Martin began building airplanes in 1907 and has been a flyer since 1908. He won a medal for an over-ocean flight from Newport to Catalina, Calif. in 1912. His business address is 16800 St. Clair Ave., Cleveland, Ohio.

Dudley M. Outcalt, Governor of the Fifth District, is a lawyer and was an officer in the Air Service, serving with the 90th, 141st, 95th and 94th Air Squadrons, and later, with the Army of Occupation in Germany. His business address is Traction Building, Cleveland, Ohio.

Sixth District

The Sixth District of the Association comprises the states of Illinois, Michigan and Wisconsin. The Vice President and Governor of this District is Charles S. Rieman, the President of the Elgin Motor Car Corporation, and the President of the Chicago Aeronautical Bureau. His address is 22 West Monroe Street, Chicago, Illinois.

The Governor of this District, Sidney D. Waldon, is the President of the Detroit Aviation Country Club and Vice President of the Detroit Motor Bus Co. During the war he was one of the group who produced the Liberty Motor. He was a member of the Aircraft Production Board and Assistant Chief of the Equipment Division Signal Corps, and served with the Army Air Service as Colonel in France. His address is 4612 Woodward Avenue, Detroit, Mich.

Seventh District

The Seventh District of the Association comprises the states of Arkansas, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota and South Dakota. Ralph W. Cram, the Vice President and Governor of this District is the Editor of the Davenport, Iowa, *Democrat and Leader*. Mr. Cram has been identified with aviation activities for many years and has written much on the subject of aeronautics. He is a leader of aviation activities in the Middle West. His business address is Davenport, Iowa.

Howard F. Wehrle, Second Governor of the Seventh District, is District Manager for the Kinear Manufacturing Co., and President of the Flying Club of Kansas City. He served in the Air Service during the war in this country and over seas in the rank of Major. His business address is 503 Railway Exchange Building, Kansas City, Mo.

Eighth District

The Eighth District of the Association comprises the states of Arizona, Colorado, New Mexico, Oklahoma and Texas. The Vice President and Governor, Edgar C. Tobin of San Antonio, Tex., is engaged in the automobile business in that city, as sales manager for the Hudson & Essex Distributor Co. During the war, Mr. Tobin was first with the Lafayette Escadrille, and then in the Air Service. He is credited with the destruction of six enemy planes. He has been decorated with the *Croix de Guerre*, and the D. S. C. by the United States. His address is Roman & Oakland Streets, San Antonio, Tex.

The Second Governor of this District is Wm. Long who was a flyer in the Air Service, and who travels extensively by airplane. Mr. Long flew last fall to the Detroit Aviation Meet from San Antonio, Tex.

Ninth District

The Ninth District of the Association comprises the states of California, Idaho, Montana, Nevada, Oregon, Washington, Wyoming, Utah, and the territory of Alaska. The Vice President and Governor of this District is P. G. Johnson, who is connected with the Boeing Aircraft Corp. His business address is 2432 North Broadway, Seattle, Wash.

C. H. Messer, the Second Governor of this District is an electrical engineer, and is the President of the U. S. Aircraft Corp., conducting a commercial aviation business in the Northwest. He was a pilot and instructor in the Army Air Service during the war. His business address is 1302 West Second Avenue, Spokane, Wash.

Coming Aeronautical Events

FOREIGN

1923

March 15 — *Entries close for Dutch Height Indicator Competition.*

June — *International Aero Congress, London.*

July 20-
Aug. 12 — *International Aero Exhibition, Gothenburg, Sweden.*

Dec. 1 — *Entries close for French Engine competition.*

Governors-at-Large

The Association, in accordance with its constitution and by-laws, has five Governors-at-Large. They are:
Governor-General Leonard Wood, U. S. Army, Manila, P. I.
Hon. Newton D. Baker, Ex-Secretary of War, Cleveland.
Gould Diets, Omaha, Nebraska.
Hon. Wm. P. Mac Cracken, Chicago, Ill.
Wm. F. Roberts, Bethlehem Steel Co., Sparrows Pt., Md.
The following committees also exist under the Association by-laws:—

Legislative Committee

Hon. William P. MacCracken, 959 The Rookery, Chicago, Ill.
Alexander Armstrong, Attorney General of Maryland, Title Guarantee and Trust Building, Baltimore, Md.
Philip A. Carroll, 55 Wall Street, New York, N. Y.
C. Jacob, Assistant District Attorney, City of Pittsburgh, Bergen Building, Pittsburgh, Pa.
Col. W. Jefferson Davis, Lawyer, 1110-1112 First National Bank Building, San Diego, Calif.
Hon. Melvin M. Johnson of Johnson & North, Boston, Mass.

Publicity Committee

Chairman: James T. Williams, Jr., Editor in Chief of the Boston *Transcript*, Boston, Mass.
Maj. Loring Pickering, North American Newspaper Alliance, 63 Park Row, New York, N. Y.
Ralph W. Cram, Editor, Davenport *Democrat*, Davenport, Iowa.
C. S. Johns, Editor, St. Louis *Post Dispatch*, St. Louis, Mo.
Elbert H. Baker, Cleveland *Plain Dealer*, Cleveland, Ohio.
Director of Information: Clifford A. Tinker, 26 Jackson Pl., Washington, D. C.

Soaring Flight Committee

Dr. George W. Lewis, National Advisory Committee for Aeronautics, Navy Department, Washington, D. C.
Orville Wright, Dayton, Ohio.
E. T. Allen Massachusetts Institute of Technology, Cambridge, Mass.
Prof. E. P. Warner, Massachusetts Institute of Technology, Cambridge, Mass.

Contest Committee

Lt. Col. E. P. Lahm, State, War and Navy Building, Washington, D. C.
B. Russell Shaw, 26 Jackson Place, Washington, D. C.
Porter Adams (Collier Trophy Committee), 1352 Beacon St., Boston, Mass.

Foreign Relations Committee

Frank Dickson, Packard Motor Car Co., Pittsburgh, Pa.

Membership Committee

The Membership Committee is composed of the nine District Vice Presidents, with Conway W. Cooke of National Headquarters, as Chairman.

In addition to the Committees numerated above, there are now in formation the following committees: Executive Committee; Finance Committee; Industrial Research on Aeronautics Committee; Scientific Research on Aeronautics Committee; Airways and Operations Committee; Junior Activities Committee; and Women's Auxiliary Committee.

General Manager

In order to co-ordinate the activities of the various committees and to act as Executive Officer at the General Headquarters, under the Resident Vice President, the office of General Manager was created. The incumbent of this office is Lt. Col. Harold E. Hartney.

Lieut. Colonel Hartney, is a graduate of law of the University of Toronto, and the University of Saskatchewan in 1914, but within a year thereafter he joined the Royal Flying Corps, where he remained for two years. As Captain he received the Italian Silver Medal for Valor, and was transferred in September, 1917, with the rank of Major to the American Air Service. He organized, trained and took to the front, the 27th Aero Squadron. Colonel Hartney was with the 20th British Squadron, which—although a double-seater squadron, is credited with more victories than any other Squadron in the British Air Force during the war. Colonel Hartney is officially credited with the destruction of six enemy planes and was in the first air battle of the war, at the first battle of the Somme. On Aug. 21, 1918, Major Hartney was promoted to Group Commander of the First Pursuit Group and in December, 1918, was transferred to duty at Great Headquarters at Chaumont. In February, 1919, he was promoted to the rank of lieutenant-colonel, returned to the United States and became successively Chief of Training, Acting Chief of Operations, and Chief of the Civil Affairs Division in the Office of the Chief of Air Service. Colonel Hartney resigned from the United States Army in October, 1921. In addition to the above decorations, he holds the Distinguished Service Cross, Legion of Honor, and the Croix de Guerre with two palms.

Membership the Great Need

As was stated in AVIATION immediately following the Detroit Convention "Membership is the great need during the first year and this will come from all sections of the country as the N. A. A. is the kind of organization which everyone interested in aviation has been awaiting."

In order to do this we need membership, — active, not passive; and it is up to everyone of us to work constantly for new members in order to convince the country of the need of air transportation — commercial as well as military, — economic as well as technical.

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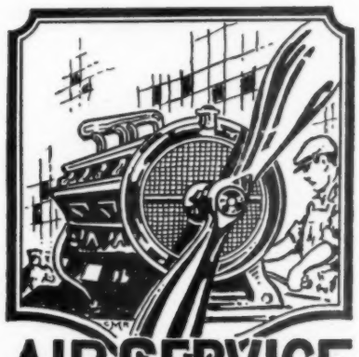

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Then there is shop equipment such as Electric Motors, ¾ to 50 h.p., G. E. and Robbins & Meyers; Special Tools; Gauges, large assortment; Shaft Hangars, various.

Wearing Apparel for chauffeurs and aviators include such items as 2330 prs. Rubber Boots, various; 4457 Leather Coats, various; 612 prs. Gloves, horsehide, buckskin, paper, fur; 1096 Aviators' Helmets, leather, knit; 7743 Trousers, moleskin, leather; 764 Gauntlets and Gloves, left & right singles; 490 Oil Hats.

Catalog of Auction gives the complete list, condition of the many offerings, quantities and general information. Send for it and then plan to be at the Middletown Depot on the 6th. Catalog may be obtained from Commanding Officer, Air Intermediate Depot, Middletown, Pa. The Government reserves the right to reject any or all bids.

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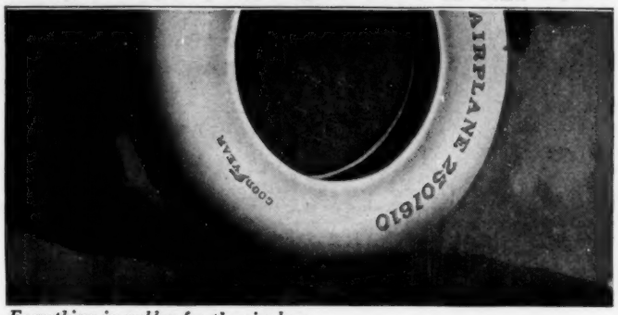

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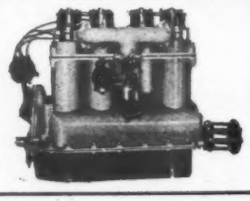

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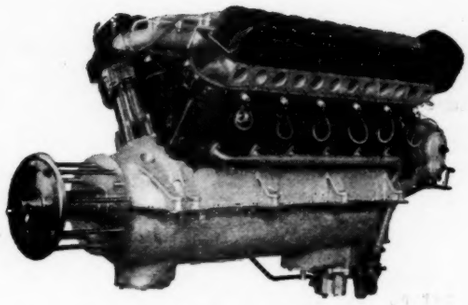

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